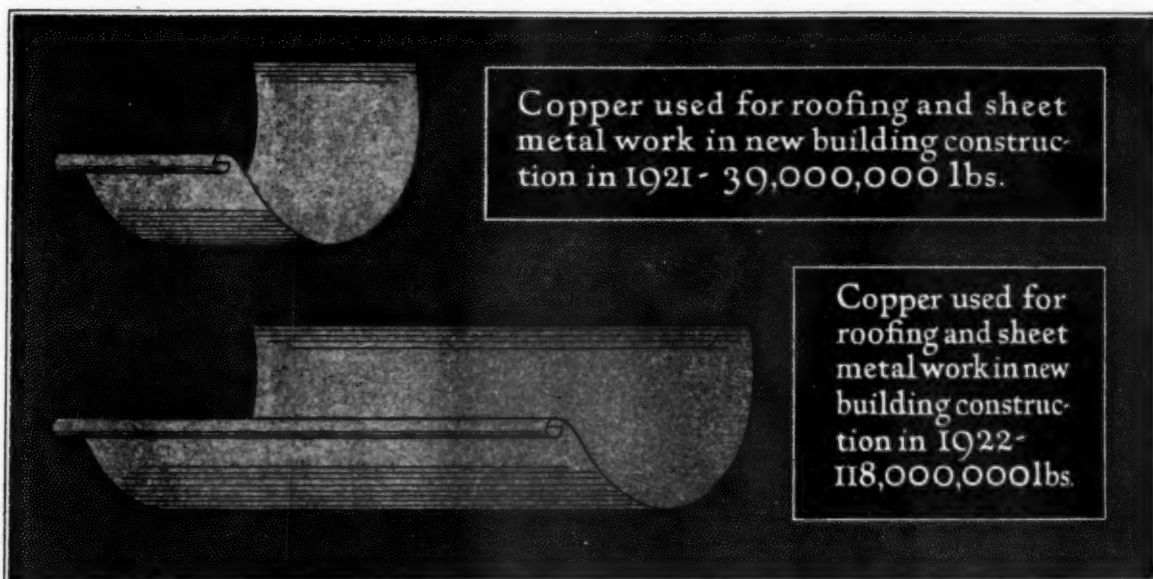


# AMERICAN ARTISAN and Hardware Record

VOL. 84. No. 18. 620 SOUTH MICHIGAN AVENUE, CHICAGO, OCTOBER 28, 1922. \$2.00 Per Year.



Copper used for roofing and sheet metal work in new building construction in 1921- 39,000,000 lbs.

Copper used for roofing and sheet metal work in new building construction in 1922- 118,000,000 lbs.

## *Let us help you* **SELL COPPER**

The public is buying more copper than ever before. Copper has become the popular choice everywhere. People know Copper. They believe in it.

That is why the roofing and sheet metal industry will this year consume 118,000,000

pounds of Copper in new building alone—200% more than in 1921.

Next year will be even bigger. Building is still far behind. And in addition, the bulk of the repair business will be done in **COPPER**.

Are you getting the business resulting from our wide advertising of Copper, which the people of your town are reading in The Saturday Evening Post, Literary Digest, House &

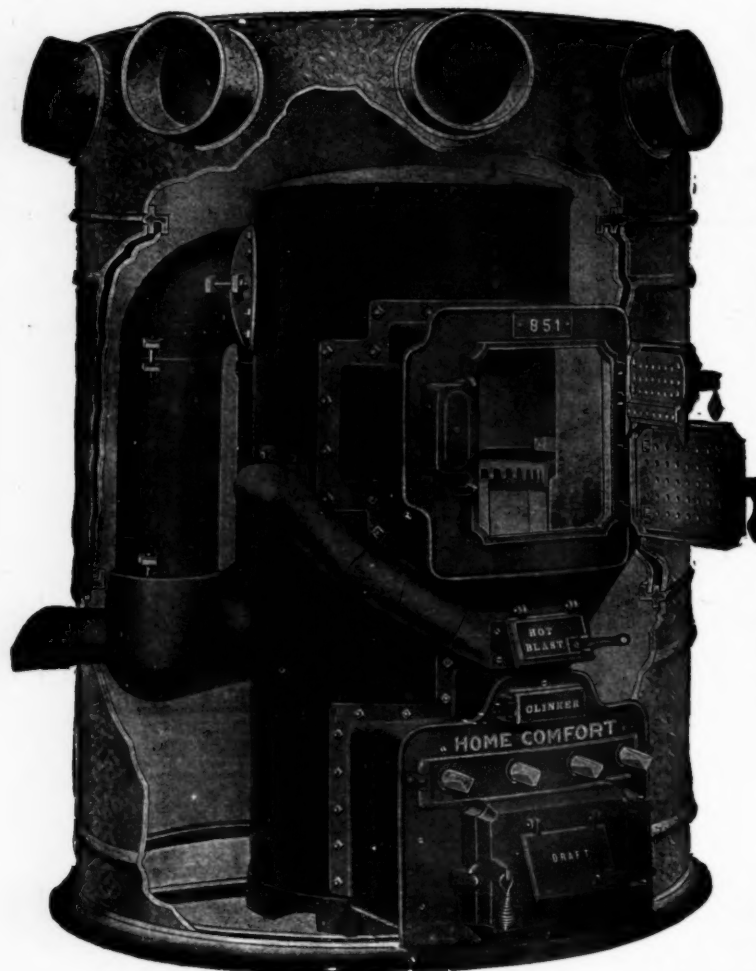
Garden, World's Work and other magazines of big circulation?

It will pay you well to make yourself known as the *Copper specialist in your territory*.

We have prepared a ready-to-use campaign for you that will bring the Copper business into *your shop*. Write for it today. Let us help **YOU** sell Copper.

## **COPPER & BRASS RESEARCH ASSOCIATION**

25 Broadway - New York



## "HOME COMFORT"

### THERE ARE NO BETTER WARM AIR HEATERS

**M**ECCHANICAL construction in general means little to your prospective warm air heater buyers. Comfortable, economical heating construction is the topic that deeply concerns them.

That's where the "Home Comfort" features become valuable to you.

Your prospects can understand that steel won't crack—they can see that boiler-riveted joints can't leak soot into the rooms and that a large radiating surface gives them greater volume of warm air.

That's why "Home Comfort" Warm Air Heaters have been giving comfortable heating service to thousands of users for many years.

*Our latest catalog together with our Dealer Sales Plan will interest you.*

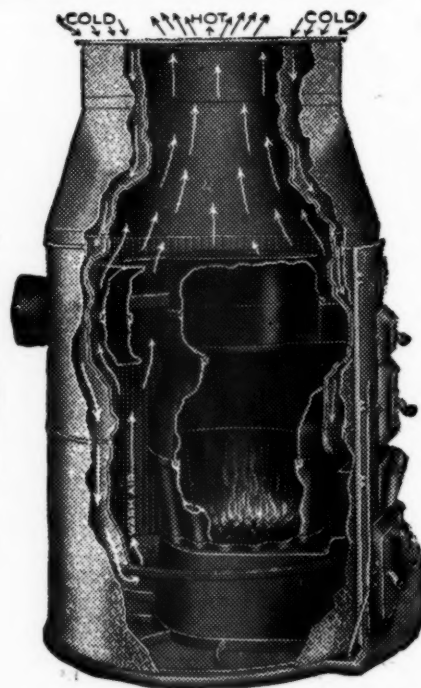
*We will gladly send them on request—write today.*

**ST. LOUIS HEATING CO.**

2400-06 COLEMAN ST.

ST. LOUIS, MO.

## The Wide Awake Dealer's Choice



*For exclusive territory rights address*  
**THE WISE FURNACE CO.**

**AKRON, OHIO**

Founded 1880 by Daniel Stern

Thoroughly Covers  
the Hardware, Stove,  
Sheet Metal, and  
Warm Air Heating and  
Ventilating Interests

# AMERICAN ARTISAN and Hardware Record

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## THE RISING TIDE OF PRICES

One of the most important statements made at the recent conventions of hardware manufacturers and wholesalers in Atlantic City was the declaration issued by the manufacturers that prices would not only not be reduced but that there was every reason to expect a still further advance this fall and winter.

Prices on hardware have been going up—in practically all lines—and with very good reasons.

Pig iron was sold in Chicago at \$21.00 per ton on January first of this year. Today the price is \$31.00.

Tin-plate prices, also Chicago market, were based on a figure of \$9.65 for 14x20 IC, as against \$10.00 today.

Wire was sold at \$2.20 per 100 pounds, as against \$2.45 today.

Galvanized steel sheets, 28 gauge, sold at \$5.15, as against \$5.85 today.

Plain 3½ inch butts, the sugar of the builders' hardware department, were quoted at \$2.40 to wholesalers as against \$2.70 today.

A sixteen-ounce hammer of standard grade could be bought by the retailer at \$1.12½, as against \$1.04 today.

It will thus be seen very readily that there has been nothing like a corresponding advance in the prices of manufactured products, as compared with the nearly fifty per cent rise in the chief raw material which enters into their manufacture.

Then add to this the fact, that there is an actual scarcity of stock on hand, both among

wholesalers and retailers of hardware on one hand and among the manufacturers on the other hand, and we have another perfectly justifiable reason for advancing prices.

But when we consider the fact that the farmer—taken as a class—is not receiving prices for his products which can in any way be considered fair in comparison with those in other lines, it becomes somewhat difficult to figure out how this class is going to accept the higher retail prices which must inevitably follow advances by manufacturers and wholesalers.

American Artisan has pointed out on several occasions that hardware merchants and other retail distributors of iron and steel products, such as stoves, ranges, warm air furnaces, sheet metal work, etc., should take great care in making it clear to their customers that, while circumstances over which they have no control make it necessary for them to ask more for their wares or for their work, they are asking only such prices as must be considered fair by any one who knows the actual conditions.

We must guard against a run-away market. Buy whatever is necessary to keep your stock in proper condition to serve your customers efficiently.

But do not place orders for the same items with half a dozen concerns, simply because one or two happen to be unable to fill your requirements.

There must be no recurrence of the 1919 and 1920 buying craze.



## *Random Notes and Sketches.*

*By Sidney Arnold*

I was glad to learn that my friend Irving S. Kemp, Vice-President of the Evansville Tool Works, located in the Indiana city of that name, was elected to serve on the Executive Committee of the American Hardware Manufacturers' Association at its recent convention in Atlantic City.

\* \* \*

Another of my good friends whose executive ability was recognized was Samuel D. Latty, President of the Kirk-Latty Manufacturing Company, Cleveland. Mr. Latty was elected one of the three vice-presidents of the Association, and Frank Baackes, Vice-President and General Sales Manager of the American Steel & Wire Company, was also chosen as one of the vice-presidents. Pretty soon I shall be known as "The Friend of the Vice-Presidents."

\* \* \*

Whenever Ralph Blanchard is asked to "make a few remarks" at a gathering of sheet metal or furnace men, he prefaces his remarks with a story, and here is one I heard him tell during the Michigan outing:

A certain minister who had been asked by his congregation to turn in his resignation selected as his text for his farewell sermon, the following:

"I go to prepare a place for you, that where I am there ye may be also."

A stranger, noting the disapproval with which the text was received by members of the congregation, turned an inquiring eye on the man sitting beside him. He received back this answer, delivered in a hoarse whisper:

"He's going to be the chaplain at the state penitentiary."

\* \* \*

W. P. Cooke of the Monroe Foundry and Furnace Company tells the following story of an inci-

dent that happened on the Pere Marquette:

Between stations a train came to a sudden stop with a tremendous grinding of brakes. Immediately a worried-looking man rushed down the track and demanded of the brakeman the reason.

"What is it?" he asked. "An accident?"

"Somebody pulled the bell rope," was the reply. "The engineer put on the brakes too quickly, and one of the cars went off the rails. We'll be tied up about four hours."

"Four hours!" exclaimed the passenger. "But I'm to be married today!"

Instantly the brakeman turned on him with suspicion.

"See here," he ejaculated, "you aren't the guy who pulled the bell rope, are you?"

\* \* \*

"Draw your own conclusions, and if you do you are wrong anyway," said Martin Engelhardt, the Chicago hardware merchant, and then he told the following story:

A battered up colored gentleman entered a surgeon's office and while waiting for his turn he chatted with the attendant who in the course of conversation suggested to him that if he would keep out of bad company, he would not have any need of a doctor's care.

"Yas'm," said the fellow, "dat's de troof, but, I jes' naturally can't keep out of bad company, 'case I cain't git enough money to git me a divorce."

\* \* \*

"When you are sure you are right, go ahead," is a good policy," says E. S. Gellatly, General Sales Manager of the Illinois Zinc Company, "but I am also inclined to agree with the colored soldier that so long as you are not sure, the best thing to do is to wait; this dusky rookie was doing guard duty for the first time. Along came one of those

officers who wear silver chickens on their shoulders. The rookie naturally got excited and flustered.

"Halt!" he yelled and then stopped.

"Well, what are you going to do next?" inquired the colonel after he had remained on the spot like a graven image for some seconds.

"I ain't sure, Boss," admitted the darky. Then he added dangerously: "But, by golly, yo' better stan' right whah yo' is till I thinks what I'se gwine to do."

\* \* \*

As you all know A. W. Glessner of the Excelsior Steel Furnace Company is quite a globe trotter. He was abroad last winter and told me of several amusing incidents on that trip.

One of these happened on the boat going to Europe. One of the passengers was in the insurance business and endeavored to combine business with pleasure. Unwilling to lose a chance of canvassing so many prospects who could not possibly get far away, he turned loose a flood of eloquence on a Scotchman.

"Surely," he said, "you see the advantage of taking out a policy if for nothing except to cover your burial expenses."

"Wait till we get to land, mon," retorted the wily Scot. "I might be lost at sea."

\* \* \*

Charlie Gohmann, of Pointer Range fame, has a friend whom we shall call Smith because that is not his name.

Smith took a day off and went down into Kentucky to fish. He found a small though promising pond and had his line in for three hours without getting a solitary bite. A farmer's boy had been watching him with considerable interest most of the time, and finally Smith demanded querulously:

"Say, are there any fish at all in this pond?"

"I don't know," the youth answered, "but if there are they must be pretty little ones, for the pond wasn't there until it rained yesterday."



# The Latest News About Stoves and Ranges

Items and Discussions of Interest to the Manufacturer and Retailer of Kitchen Ranges, Heating Stoves and Accessories.

## *Electric Ranges Grow in Popularity.*

The use of electric ranges is becoming more and more popular. Statistics show that there are approximately 140,000 electric ranges in the United States today. It is estimated that at least 54 per cent of these ranges are installed west of the Rocky Mountains. About 6,000

communities with electric service have special electric cooking rates.

The records of the Associated Manufacturers of Electrical Supplies show that 21,739 electric ranges were manufactured in 1919, and 41,000 in 1920. In 1921, it is estimated, 30,000 electric ranges were installed, and it is predicted 100,000 will be sold this year.

## *Southern Stove Manufacturers Look for Good Business in 1923.*

*They Say That Conditions Are Much Improved Among Farmers and in Industrial Centers.*

STOVE manufacturers in the southern states look upon 1923 as a year in which they are to show great progress.

At the recent annual meeting of the Southern Stove Manufacturers' Association, every speaker—all of them manufacturers—expressed himself as greatly encouraged by the business done so far this year and distinctly hopeful of even better sales in 1923. We cite in the following excerpts from the remarks of some of them:

C. E. Randall, President of the Association and also President of Knox Stove Works, Knoxville, Tennessee, stated that by real co-operation, the foundation for true and lasting prosperity will be laid.

"Never before in the history of our country," said Mr. Randall, "have industrial conditions called for closer observation, greater mutual consideration and the exercise of a broader application of common sense than they do at this time. Never before has capital needed the co-operation of labor, and labor needed the co-operation of capital more than is evidenced today. The worst strain is undoubtedly past, but the oil of mutual helpfulness must be poured into the creaking machin-

ery of our industrial relations in generous quantities if we are to work shoulder to shoulder for the betterment of general business conditions and for the greater prosperity of each individual which lies immediately ahead—a prosperity that cannot now be denied us all if less selfishness and more helpfulness enter into the plans which we formulate and the spirit with which we undertake the solid rebuilding of American industry.

"The fact is that prosperity is already here; it remains only for each individual, like the prodigal son, to return to the house of his father and render that service which his talents have best fitted him to perform. Fewer silk shirts and less golf are the needs of the hour. Good, honest, hard work, individually and collectively, is the one and only thing needed."

H. J. Karges, the "dean" of the association and President of Indiana Stove Works, Evansville, Indiana, with a wealth of entertaining detail, told of his annual pilgrimage through the southern states in search for the business signs of the times.

"Somewhat chastened by the fiery ordeal through which all have

passed in recent months, but with plenty of courage to keep up the fight and with supreme confidence in a real come-back in business with the harvesting of this year's crops, the merchants of the South are as optimistic a bunch as can be found in any section—and when I say optimistic I mean it with a big 'O,'" is the way Mr. Karges began his story.

"There is a little more caution being exercised by the buyers," he continued, "but that is the part of common sense. Crops are more diversified than in past years, and throughout the Southeast, where the boll weevil is a newer problem than in the Southwest, the farmers are settling down to a scientific and systematic siege that means trouble for the pest to the nth degree. Grain growing more than doubled in the South the past year, and this turn to grain accounts to some extent for the decreased acreage in the cotton crop with the resultant higher prices for the fleecy staple.

"Everywhere I went I found people talking of the future and not of the past, and that in itself means better times. The South forgets its troubles more quickly than any other section. Probably the sunshine helps to brighten up the disposition of Southern people and drive their cares away; at any rate, they get the gloom out of their systems and whistle 'right smart' even when the whistling does not seem to be any too good. But it is good now and there is plenty of reason for it. The South is happy and times are good. My trip was a tonic every mile of the way."

"Jesse" (J. F.) James, President of Mascot Stove Manufacturing Company, Chattanooga, Tennessee, who has recently recovered from a long and severe illness, was toastmaster at the annual banquet and was not supposed to say much except his introduction of the various

speakers, but you simply cannot stop him when he has something that he thinks is worth while, and he did say something worth while, as you will agree from the following excerpts from his remarks:

"A year in the 'lock-up,' while the weighty problems of reconstruction coincident with post-war conditions in the business world have engaged the undivided attention of my many friends in the stove industry, has given me time to consider some of the things that to the rush of our intensive work-a-day life we overlook.

"Returning prosperity brings us face to face with a new order of things—conditions that mean more to each and all of us than the mere material benefits that come from the successful conduct of our business. The responsibilities that are crowding upon us call for greater strength of character and a higher order of citizenship than what the past demanded. In the home, in the office, in the shop, as well as in our municipal, state and national affairs, the business men of this country must strive for a higher ideal. The cry today is for a real and practical application of the Golden Rule, and those of us who fail to heed this cry will be the greatest sufferers from our neglected opportunity.

"This is the age of business—the most successful home is that which is run on a business basis—the most successful church is the one that practices as well as preaches right business principle—the keenest news our courts, our legislative bodies must hew to the business line or they fail to function.

"Practice has always been considered better than precept, and business is practice. Few business men talk about how business should be done—they do it. Therefore, their doing it is their first and last word. That word must be right if the world is to have confidence, and the world must have confidence or our whole structure will topple to the ground. We, by our practices, are the greatest teachers of the young, and young America must be taught the right things of life. It is by our

works that we rise or fall. This truth is as old as the ages, and if the acts of our every-day life exemplify it, each recurring dawn will give us added strength to go forward courageously with our share of the great world's work. This is the thing that *men* should do—let us then be *men* in every right sense of the word."

### *How Kitchen Ranges Got Into Society Column.*

The accompanying illustration doesn't look much like an advertisement, does it? Yet it is. For this is the way Herre and Pierce, stove



merchants in Fremont, Nebraska, announced the arrival of a recent shipment of Lorain-equipped stoves. Just another tip to stove merchants on advertising "that is different."

### *Go After Gas Range Sales to Apartment House Owners.*

Latest estimates show that there are hundreds of thousands of apartment houses in the United States. The majority of these are piped for gas. The great demand for dwelling places has brought the apartment house into its own. Apartment buildings are being built in the larger cities at an astonishing rate.

These facts should mean a lot to gas range dealers. Apartment houses need gas ranges—from four to a hundred or more, depending on the size of the building. The dealer will find, however, that it is not easy to sell this field because he must sometimes sell as many as three people. Thus more effort is required than in the ordinary individual stove

sale—but the sales that result are worth all the effort involved.

Older apartment houses are a good field because the stove replacement percentage is higher than in detached dwellings. This is because people are not as careful with furnished equipment as with that which is their own.

### *Add Gas Ranges to Their Regular Line.*

Birmingham Stove and Range Company, Birmingham, Alabama, have recently added a gas range to their line of stoves. They report that they are working to capacity and that on account of the large business they are enjoying the plant has had to be extended and a large warehouse acquired.

### *Things You Should Do to Prevent Fires.*

Keep waste paper, packing material and rubbish cleaned up, and remove from building at least daily.

Make frequent personal inspections from a fire standpoint.

Instruct and drill employees on what to do in case of fire.

Be careful about the use of matches.

Put up "No Smoking" signs, especially in hazardous sections and smash the first lunatic who insists on violating the rule.

Locate your nearest fire alarm box and learn how to turn in an alarm.

See that your electric wiring is standard and be careful in the use of electrical devices.

Have all smoke pipes and chimneys inspected and repaired by a competent person before starting fires for the winter.

Keep gasoline in safety cans and in a safe place.

Keep water barrels and pails filled and extinguishers charged.

Use only safe floor oils and sweeping compounds.

Feel your personal responsibility for possible loss of life and property by fire and act accordingly.



# Events and Progress of the Hardware Trade.

What the Retailers, Jobbers and Manufacturers Are Doing.  
Latest Selling Methods and Experiences of Successful Men.

## W. J. Klein Quits Road to Engage in Retailing Hardware.

W. J. Klein, who has represented the Michigan Hardware Company at Grand Rapids in Southern Michigan territory for the past four years, has retired from the road to

take an active part in the management of the Kendall Hardware Company, Battle Creek, in which house he has long been interested. His territory will be divided between Walter Graham and Louis Taylor.

ber of nationally advertised articles which he has to sell, but of far more absorbing interest is the table of comparative prices.

For creative advertising and fearless, compelling salesmanship here

## Merchant Advertises "Our Price" and "Theirs" To Drive Out Mail Order Competition.

And Hardware Company Once More Proves That Local Prices Are Lower on an Average.

**E**VEN if you pay a merchant's license, a street tax, a building rent, a home owner's property and personal tax, go to church, attend lodge, vote and stand the cussing of being one of the directors of the Commercial Club—don't think all these commendable virtues are going to stop the mails and the printing presses that turn out mail order catalogues.

For human nature is the same the world over, whether it be in Chicago, Illinois, where these lines are written, or in West Plains, Missouri, which is in Howell County, where nature and man combined to produce the largest, if not the showiest, county of the famous Ozarks. A bargain is a bargain everywhere, and we are all looking for the lowest prices.

But writing of Howell County, Missouri, one is reminded not only of its largeness, speaking geographically, but of other things—such as its remoteness from railroads, its paucity of population per square mile, the dogged determination of the rural free delivery system and the parcel post, and—

C. T. Aid, president Aid Hardware Company, West Plains, Missouri.

For in this "truly rural," primitive, hard-fisted community, where living comes hard and goes harder,

where the sham and artificialities of mail order merchandising find a most receptive audience, there is to be found Mr. Aid, owner of one of the finest general stores to be found anywhere, and who can teach any merchant how to drive out mail order competition.

Mr. Aid's formula is simple—just tell the facts!

He does so in the home paper, in a humanly interesting article, the title of which is "They Have Changed Their Tune!"

"For lo, these many years," writes Mr. Aid, "the battle cry of the mighty Mail Order Houses has been CHEAP PRICES, and they used all their great power to discredit the Home Merchant, and caused the farmer to be dissatisfied with local conditions. But they are 'singing a different song now.' They have just found out that their farmer friends don't want CHEAP GOODS. Why should the farmers want CHEAP GOODS when they are getting about 40c for corn and 75c for wheat and \$12.50 for a cow? They all have "money to burn," and the little matter of price does not bother them."

That is Mr. Aid's introduction, and if you will turn to the accompanying illustration, you will observe his "follow-up."

It is interesting to note the num-

### They Have Changed Their Tune!

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To be sure these Mail Order houses claim to sell quality goods cheap; but their merchandise is no better, and often inferior, to that your Home Merchant carries. We challenge the world to find a higher grade of merchandise than we carry. In Hardware we have the WINCHESTER, DIAMOND EDGE, KEEN KUTTER, BLUE GRASS, O. V. R. DISSTON, NICHOLSON, AMERICAN FENCE, OLIVER PLOWS, MAJESTIC HANGES and many other standard lines. In our Dry Goods Department we carry Corticelli Silks and Varns, Sunshine Coats and Suits, Jack Tar Togs, Amoskage, Bates and Kalburnie Gingham, Renfro's Devonshire Cloth, Indian Head Muslin, Hamilton Serges, Warner's Rust Proof Corsets, Iron Glad and Monarch Hosiery, Coal's and Clark's Threads, Palm Olive and Armand's line of Toilet Articles, etc.

We wish to call your attention to page THREE in the Montgomery Ward & Company's Number 57, GOLDEN JUBILEE, Catalog. Read President T. F. Merselles letter. He tells you of sending their representative to visit you; to learn your needs and the kind of merchandise you want. No doubt but they were agreeably surprised to find that you did not want LOW PRICES.

They have TOLD THE TRUTH THIS TIME. Their prices are NOT CHEAP as the following comparison of prices will show:

	PAID PRICE	PRICE
Galvanized Wash Boiler.....	530	\$1.98
6-inch Stove Pipe Joint.....	528	.18
Mop Holder.....	528	.25
White Enamel Slop Jar.....	527	1.79
Large Lantern.....	527	1.49
16-inch Wood Chair Seat.....	525	.25
Bird Cage.....	524	3.35
Food Chopper, small size.....	524	1.59
Paring Knives, set of 3.....	525	.32
Large Glass Lamp.....	526	1.39
Electric Light Bulbs, box of 5.....	543	1.60
Imported 22 Cal. Rifle.....	495	5.90
1-pint Vacuum Bottle.....	575	1.25
Pennsylvania Tennis Ball.....	564	.43
Galvanized Wash Tub No. 1.....	532	.64
Galvanized Wash Tub No. 2.....	532	.75
Galvanized Wash Tub No. 3.....	532	.85
Galvanized Water Pail 12 qt.....	533	.25
Galvanized Water Pail 14 qt.....	533	.29
Wood Clothes pins, 10 doz.....	533	.37
Copper Bottomed Wash Boiler.....	532	3.39
All Copper Wash Boiler.....	532	5.50
Mop Sticks.....	528	.25
3 Brown.....	529	1.90
Granite Slop Jar.....	527	1.69
Granite Chamber.....	527	.54
Granite Bed Pan.....	527	1.79
White Metal Knives and Forks.....	525	.75
5-qt. Aluminum Tea Kettle.....	521	1.89
8-qt. Aluminum Water Pail.....	521	1.35
2-qt. Aluminum Double Boiler.....	521	1.39
Aluminum Syrup Pitcher.....	521	.89

There are more articles that we could make comparisons that would be favorable to us, and they have but few but what we could furnish at their prices; by paying us the cash in advance, allowing us transportation charges and allow us the same time it takes to get goods from them.

They brag about their NEW IMPROVED SERVICE shipping orders in 48 hours. Why, we can serve you about as "Quick as a cat can wink her eye." How is that for AID HARDWARE SERVICE

**Aid Hardware Company**

West Plains, Mo., Oct. 10, 1923 C. T. Aid, President

### How Aid Hardware Store Battles Mail Order Competition.

is something new. "Take your catalogue in hand," Mr. Aid in effect tells his readers, "and turn to page oo. Look at their price, look at ours. You can save a little money on some of them. We could have

left those items out of the list. But we wanted to tell you the *facts*. We took what we had in stock. Suppose you wanted all the items we put down here. You can come in here, see what you are getting and take them *all* home with you for \$37.67. Or you can send your money out of Howell County, take

a chance on what you are getting and wait a week or so—for \$44.30."

Mr. Aid, like the Hoosier humorist who spells his name differently, has a sly quality of satire. "Of course," he might add, "our farmers have 'money to burn,' and this is just as quick a way to get rid of it."

## Stone Urges Closer Relationship Between Sales Managers for Manufacturers and Jobbers.

*Excellent Suggestions Are Made Which If Followed up Will Cure Many Evils of Trade.*

**A**T THE Monday session of the Automobile Accessories Branch meeting during the hardware conventions at Atlantic City, H. Stone, of the Automotive Products Company, Hazelton, Pennsylvania, spoke on "The Relationship of the Sales Manager of the Manufacturer and the Sales Manager of the Wholesaler," and as many of his statements apply with equal force to the general hardware business, we are glad to give further publicity to them in the following:

### Excerpts from Mr. Stone's Address.

Being rather prejudiced on this subject, I immediately thought of the lack of contact and association that were the result of my position and wondered whether or not this very same problem was affecting others in this organization, resulting in the same lack of good constructive work that could possibly be accomplished if this condition were eliminated: The lack of contact between the selling executives of Jobber and Manufacturing members.

1. Why is it in periods of deflation, such as we "enjoyed" in the year of 1921, certain hardware jobbers of automobile accessories made progress and others held their own, while a good many lost ground?

2. Why is it that a sudden stress was laid on the selling departments (the buying end being temporarily shelved), when everybody proceeded to put their house in order?

3. Whence the sudden demand for honest-to-goodness sales managers and original go-getters?

4. Why the innovations in advertising, new phases of selling and progressive efforts to distribute merchandise that we have been discovering lately?

5. Do you know there are actual examples of these in the plans some of our trade publications have already adopted, our manufacturing concerns are already putting into practice, and our jobbers instilling into their distributing methods?

6. If, then, we are all realizing that business is as big as its sales volume, then why in thunder have we not laid more stress on the importance of our

selling executives before, giving them the necessary scope and holding them responsible entirely for our lack of profit and progress?

7. And if we have, how can we help improve their particular positions and aid in the results of their work?

Possibly we all might be interested in the answers to those questions.

1. If the proper selling analysis had been made, it would have demonstrated that luxury automotive items do not sell as well during the periods of deflation as necessities or integral wearing parts. Some jobbers reasoned basically right, took their first loss, which was their best, unloaded at the psychological time and turned their efforts to and concentrated for the time being on merchandise that would sell more readily, and thus forced a turn-over and at a profit. Others waived, but at the second half of the year took their loss and thus held their own. On the rest it finally dawned too late and while they did their level best, such as it was, not being at the opportune time, they were forced to a definite position of a loss.

2. Because easy order taking ceased and it became, what the jobbers glowingly termed a "Buyer's Market," and we all had to go out and fight harder for business.

3. And only then did the position of jobbers' and manufacturers' sales managers begin to be looked up to with proper expectations as to what their functions were to perform.

4. Because the difficulty in securing business was bound to develop newer and more progressive attitudes and force the hand of jobber, manufacturer and trade publication alike. It was logical.

5. Of course, you know that certain manufacturers are not waiting for the jobber to sell their merchandise. They are creating a direct demand for their products, establishing their own suggested schedule of discounts and resales and only use the jobber as a warehouse factor because of his financial standing, and as a means of distribution because of geographical location.

They also are beginning to know what methods are most effective when a jobber does not actively push a line, so that proper distribution of their merchandise is not interrupted. They know when a jobber shows any tendency to cut prices and otherwise jeopardize the standing of a line.

6. Because in some cases we are all selling haphazardly. Because we haven't found the right man. Because, while we have the funds—the standing in the trade, we haven't the organizing genius. Who was it said that genius is the art of taking infinite pains? How many of us are taking the proper pains, we could possibly exert, with our business?

7. We can help improve the position of our selling executives by laying emphasis on the consideration they should have for one another. Lasting business friendships are bound to evolve better results and closer cooperation of jobber and manufacturer only will eradicate petty antagonisms and formulate better trading rules, as well as develop our present code of ethics, which could stand a little improvement.

Yes, we are one of the many large associations without universal standardized trading rules and joint boards of arbitration at strategic geographical points to preserve closer harmony among us. Everywhere I seem to go, the jobber seems to be dissatisfied with the manufacturer and vice versa. Friendly enemies, as you would call it.

And what are some of the methods we could consider?

How could we start to put them into effect?

(A) Closer association at convention time, even distinct merchandising sessions to promote better fellowship and contact.

(B) The necessity of the jobbers' sales managers visiting show displays at all times. We not only want the purchasing agents but we want to reach the party who is responsible for the sale of merchandise his purchasing department buys.

membership book of not purchasing

(C) Proper listing in the Association agents delegates of jobbers and convention representatives of manufacturers, but *sales managers* of both, so as to create a better tendency of familiarization than now exists, thereby eliminating some of the present barriers, thus promoting an easier and direct approach, and a freer discussion of mutual problems, either in person or by mail.

## Business Has Provided Most Fundamental Blessings.

Business educated the world to the value of good deeds, sound principles and noble emotions. With no business there could have been no human rights, no religious or intellectual liberty. Business has provided the ways and means for all these fundamental blessings and many besides music, art, architecture, books, a free press, and every useful invention the world has today. With and through business our farms are cultivated, our railroads operated, and all the innumerable activities which protect the race from discouragement and despair fostered to the strength and glory of modern civilization. To be busy is the true end of man.



# Suggestions and Plans for Window Displays.

## Instructive Examples from Exhibits in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition.

### *Window Display Solves Christmas Buyers' Problems.*

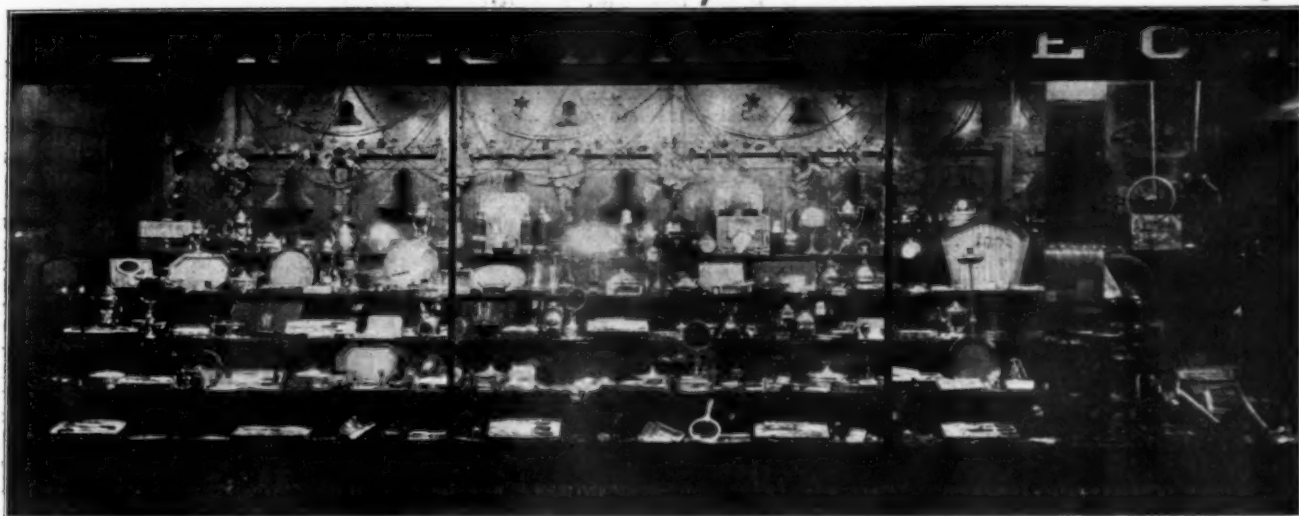
If the first problem of the window display is to halt the potential customer by attracting and holding his eye, then the second is to produce the buying urge which will induce him to step inside and give his order.

Now at Christmas time this buying urge pretty generally exists so that certain factors of window

display that sets out the merchandise in quantity (i. e. variety) and with a nearness to the eye so that the buyer could in effect *see* the goods and which would permit him to study at his leisure the selection of the gift or gifts that appeal to him, not only would solve the buyer's problem, but would materially assist the merchant on account of the resulting smooth and quick sale.

### *Save Surface Committee Offers \$1,000.00 in Prizes.*

One thousand dollars in prizes is being offered by the Save the Surface Campaign for the best stories and pictures of notable American landmarks. There is hardly a community in America but has its buildings or landmarks which have been handed down by previous generations. For example, we have the National Capitol,



Sales Making Window Display by Otto J. Gress, Bunting Hardware Company, Kansas City, Missouri.

merchandising may be temporarily dispensed with, and one or two new factors introduced. Consider the buyer's viewpoint:

Christmas shopping is never anything pleasant to conjure, and it is the part of human nature to put off as long as possible those tasks which are unpleasant. Of course, Christmas advertising (of the right kind) contains long lists of gift suggestions, but that is not sufficient. The buyer wants to *see* and *know* what he seeks to purchase. But he dreads the pawing and shoving of the crowds, dealing with the overworked and many times fretful clerks, and the feeling—that he can't "shop" but must take what he possibly doesn't desire but because it is the easiest way out of the situation.

Such a display was prepared by Otto J. Gress for the Bunting Hardware Company of Kansas City, Missouri. Mr. Gress has not endeavored to focus the particular selling aim of the window. This effect was not sought at. Instead, as he says:

"This Christmas window may not be our most artistic window but from the standpoint of its selling power, it is hard to beat. The stair-step effect gave us an opportunity to display hundreds of our Christmas items, and one could select gifts for the entire family. Christmas decorations in the background and green velvet draped over the steps set off "the display."

Learn to smile from your heart by learning to be happy.

Washington's home at Mount Vernon, Independence Hall, and many others. Every town or village has its buildings or landmarks that have been left by those who, through care in building and thrift in painting, have preserved for their children and their children's children that which is dear to them. It may be a country church or an early settler's home; the building in which some industry, now large, had its beginning; or the house in which some famous person lived.

Whether a treasured building for merely local fame or an historic structure that has become a national shrine, it has a place in the contest.

Further information may be secured by writing to Save the Surface Committee, Box 50, The Bourse, Philadelphia.

### How You Can Best Help Your Trade Organization.

1. Attend the meetings.
2. Be on time—always.
3. It's part of your important business—let nothing keep you away.
4. Encourage officers and workers—show appreciation of their work.
5. Cheerfully accept a place on a committee—it gives you an opportunity to render service.
6. Set a good example by your faithful performance of duty.
7. Wisely and discreetly join in all deliberations and show yourself interested in others' suggestions.

### Coming Conventions

Western Implement, Vehicle and Hardware Association, Kansas City, Missouri, January 16, 17, 18 and 19, 1923. H. J. Hodge, Secretary, Abilene, Kansas.

Texas Hardware and Implement Association, Dallas, Texas, January 23, 24 and 25, 1923. A. M. Cox, Secretary, 822 Dallas County Bank Building, Dallas, Texas.

Mountain States Hardware and Implement Association, Denver, Colorado, January 23, 24 and 25, 1923. W. W. McCallister, Secretary-Treasurer, Boulder, Colorado.

Kentucky Hardware and Implement Association and Exhibition, Jefferson County Armory, Louisville, Kentucky, January 23, 24, 25 and 26, 1923. J. M. Stone, Secretary, Sturgis, Kentucky.

West Virginia Hardware Association Convention and Exhibition, Huntington, West Virginia, January 30 and 31, and February 1, 1923. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

South Dakota Retail Hardware Association, Sioux Falls, South Dakota, January 16, 17, 18 and 19, 1923. H. O. Roberts, Secretary, 1120 Metropolitan Life Building, Minneapolis, Minnesota.

Idaho Retail Hardware and Implement Dealers' Association, Boise, Idaho, January 31, February 1 and 2, 1923. E. E. Lucas, Secretary, Hutton Building, Spokane, Washington.

Indiana Retail Hardware Association Convention and Exhibition, Indianapolis, Indiana, January 30 and February 1 and 2, 1923. G. F. Sheely, Secretary, Argos, Indiana.

Oklahoma Hardware and Implement Association, The Auditorium, Oklahoma City, Oklahoma, January 31, February 1, 1923. W. A. Clark, Secretary-Treasurer, 209½ West Main Street, Oklahoma City, Oklahoma.

Nebraska Retail Hardware Association, Convention and Exhibition, February 6 to 9, 1923, Omaha, George H. Dietz, Secretary-Treasurer, 414 Little Building, Lincoln, Nebraska.

Michigan Retail Hardware Convention and Exhibition, Grand Rapids, Feb-

ruary 6, 7, 8, 9, 1923. Karl S. Judson, Exhibit Manager, 248 Morris Avenue, Grand Rapids. A. J. Scott, Secretary, Marine City, Michigan.

Virginia Retail Hardware Association, Norfolk, Virginia, February 7, 8 and 9, 1923. Thomas B. Howell, Secretary, Richmond, Virginia.

Wisconsin Retail Hardware Association, Milwaukee Auditorium, Milwaukee, Wisconsin, February 7, 8 and 9, 1923. P. J. Jacobs, Secretary, Stevens Point, Wisconsin. George W. Kornley, Manager of Exhibits, 1476 Green Bay Avenue, Milwaukee, Wisconsin.

Pennsylvania and Atlantic Seaboard Hardware Association Convention and Exhibition, Philadelphia Commercial Museum, Philadelphia, Pennsylvania, February 12, 13, 14, 15 and 16, 1923. Sharon E. Jones, Secretary, 1314 Fulton Building, Pittsburgh, Pennsylvania.

Ohio Hardware Association Convention and Exhibition, Cleveland, Ohio, February 13, 14, 15 and 16, 1923. Exhibition in the new Municipal Hall. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

Illinois Retail Hardware Association Convention and Exhibition, Hotel Sherman, Chicago, Illinois, February 13, 14 and 15, 1923. L. D. Nish, Secretary-Treasurer, Elgin, Illinois.

Iowa Retail Hardware Association Convention and Exhibition, Des Moines, Iowa, February 13, 14, 15 and 16, 1923. A. R. Sale, Secretary, Mason City, Iowa.

North Dakota Retail Hardware Association, Grand Forks, North Dakota, February 14, 15 and 16, 1923. C. N. Barnes, Secretary, Grand Forks, North Dakota.

Missouri Retail Hardware Association Convention and Exhibition, Planters Hotel, St. Louis, Missouri, February 20, 21 and 22, 1923. F. X. Becherer, Secretary, 5106 North Broadway, St. Louis, Missouri.

Minnesota Retail Hardware Association, Duluth, Minnesota, February 20, 21, 22 and 23, 1923. H. O. Roberts, Secretary, 1120 Metropolitan Life Building, Minneapolis, Minnesota.

New England Hardware Dealers' Association Convention and Exhibition, Mechanics' Building, Boston, Massachusetts, February 21, 22 and 23, 1923. George A. Fiel, Secretary, 10 High Street, Boston, Massachusetts.

New York State Retail Hardware Association Convention and Exposition, Rochester, New York, February 20, 21, 22 and 23, 1923. Headquarters, Powers Hotel. Sessions and Exposition at Exposition Park. John B. Foley, Secretary, City Bank Building, Syracuse, New York.

Michigan Sheet Metal and Roofing Contractors' Association, Bay City, February 26, 27, 28 and March 1, 1923. Frank E. Ederle, Secretary, 1121 Franklin Street, S. E., Grand Rapids, Michigan.

Hardware Association of the Carolinas, Columbia, South Carolina, May 8, 9, 10 and 11, 1923. T. W. Dixon, Secretary-Treasurer, Charlotte, North Carolina.

Arkansas Retail Hardware Association, May, 1923. (Place to be announced later.) L. P. Biggs, Secretary, 815-816 Southern Trust Building, Little Rock, Arkansas.

National Retail Hardware Association, Richmond, Virginia, June, 1923. Herbert P. Sheets, Secretary-Treasurer, Argos, Indiana.

Southeastern Retail Hardware and Implement Association, covering Ten-

nessee, Alabama, Georgia and Florida. (Date and place to be announced later.) Walter Harlan, Secretary-Treasurer, 701 Grand Theater Building, Atlanta, Georgia.

### Retail Hardware Doings

#### Illinois.

W. L. McClune of Chillicothe has purchased the hardware department of the M. J. Arnold store at Lacon.

The Bailor hardware store at Clinton has been purchased by Acquilla Bennett.

#### Indiana.

Urban Shoemaker has sold his interest in the Union Hardware Company at Lebanon to John R. Bohannon.

The hardware store of Jamison Brothers at Lafayette has been badly damaged by fire.

The Thompson-Youngblood Hardware and Lumber Company of Rockport has been incorporated with a capital of \$30,000. Incorporators are John Thompson, Joe C. Youngblood and Edson J. Thompson.

#### Iowa.

Lloyd E. Crim sold his hardware and implement store at Wallingford to Otis Jorstad.

#### Kansas.

W. E. Taylor has taken over the hardware store of Stafford and Mullett at Republic.

#### Michigan.

The Stewart Hardware Manufacturing Company, 2162 East Larned Street, Detroit, has been incorporated with an authorized capital stock of \$20,000.

H. Hinkley has sold his hardware stock at Schoolcraft to Leo Long.

Jake Zoerman has sold his hardware store at Holland to Joseph E. Zoemer.

L. C. Sanderson has sold his hardware store at Mio to William H. Hochstetler.

#### Minnesota.

O. F. Bielke of New Auburn has taken over the hardware stock of R. L. Dunn at Henderson.

#### Nebraska.

O. H. Buchanan has sold his interest in the B. and M. Hardware store at Fairbury to his partner, J. R. Moore.

At Funk, A. S. Erickson has disposed of his hardware business to a Mr. Gaundreault.

#### Ohio.

The Clossman Hardware Company at 619-623 Main Street, Zanesville, is being remodeled.

#### Oklahoma.

At Duncan, fire destroyed the hardware store at Matt and Bill.

#### South Dakota.

Charles Fisher of Pierre, whose hardware store on Pierre Street was completely destroyed by fire recently, will open a hardware store in the Grand Pacific Hotel building.

The Parsch Hardware Store at 515 South Main Street, Aberdeen, has been damaged by fire.

#### West Virginia.

The Grafton Hardware Company at Grafton has been incorporated with a capital of \$25,000. Incorporators are D. L. Ross, I. A. Ross, D. C. Peck, and R. J. Peck.

#### Wisconsin.

The Burleigh Street Hardware Company at Milwaukee are erecting a \$25,000 store at 27th and Burleigh Streets.

Ernest Hustad has sold his interest in the Hustad and Gaarder Hardware Company to Fred Gaarder.



# Study and Interpretation of Advertisements.

You Can Make Your Advertisements More Gainful by Avoiding the Faults and Profiting by the Good Qualities of Others.

The Kauffman Hardware Company, Goshen, Indiana, lays stress in a one column, five inch ad on a business point which is too often neglected. That is "SERVICE." The whole ad carries over exactly the idea which is intended: 1. That pinchers are useful. 2. That you may need a pair. 3. That, if



**LIL PEP  
THE HURRY MAN**

**A HANDY PAIRS OF  
PINCERS**

Don't be without a pair of pinchers around the house or shop, advises Lil Pep, the hurry man. You can get them—strong and reasonably—from us; pinchers that will serve you well when you most need them.

"Phone us—we do the rest."

**KAUFFMAN  
Hardware Co.**

Phone 95

you do, all that is necessary is for you to telephone the Kauffman Hardware Company. If, in addition, it conveyed the conviction that you could get a first-class pair of pinchers at a specified, fair price, it would be certain to pull like eight pair.

\* \* \*

The Hoy Hardware Company and the Chaney Hardware Company are both in Montpelier, Ind. Two of their advertisements are

reproduced this week as samples of sure business-getters.

The Hoy Company picks out an aluminum dish-pan for its Wednesday

**\$2.00**

**Aluminum Dish Pan**

**Special for Wednesday**

**\$1.29**

These pans are a NEW TYPE and STYLE and will be appreciated by all good housewives.

**Hoy Hdw. Co.**

nesday special, and tells, not only the price, but the reduction. The Chaney Company selects a pocket knife. Both ads are the same size, two columns by four inches, and both are well gotten up—except for the fact that a philanthropic printer has donated an extra "m" to "aluminum." One ad is calculated to draw women; the other, men and boys—a point that opens a question as to which trade is more desirable at this time of year. But, regardless of that, both are splen-

**Pocket Knives**

**American Made Knives**

**Blades Highest Quality Steel**

**\$1.25 and \$1.50 Values**

**SPECIAL**

**69c**

**Chaney Hardware**

did examples of vigorous, pithy display advertising, and instantly convey the impression of two wide-awake, hard-fighting competitors.

\* \* \*

There is nothing which will build up real, lasting, profitable business as quickly as will the selling at fair

prices absolutely dependable merchandise.

That is why the advertisement shown herewith, published by Knabe's Hardware Store and Sheet Metal Works, Rock Falls, Illinois, in the *Sterling Gazette*, is to be commended.

The only criticism that might be made is that the advertisement is not specific: There is no actual proof of the assertion in the two last paragraphs. Two or three quo-



**OUR  
PRICES  
AND  
OUR  
HARDWARE  
ARE  
ALWAYS**

**ON THE SQUARE**

Don't be imposed upon—there are limitations of every high-grade article on the market.

When you buy a tool or any hardware item from us you get the best obtainable—guaranteed to give you service and satisfaction.

Buy your hardware from us and receive full value for your money.

**Knabe's Hardware Store**  
**AND SHEET METAL WORKS**  
209-211 First Avenue Rock Falls  
Telephone 363-J

tations of definite prices would have strengthened the advertisement considerably.

This advertisement occupied a double column space, seven inches deep. Rock Falls, by the way, is across the river from Sterling, Illinois.

\* \* \*

Every success is a business romance and has attached to it wonderful stories, principles and ideals—splendid merchandising facts that await the touch of a human mind trained and directed towards revealing them in a way easy to be understood.

# Facts of Warm Air Heating and Ventilating.

## Reports of Progress in Warm Air Heater Research Work. Ventilating Factories, Theatres and Other Buildings.

### *Warns Against Use of Certain Types of Oil Burning Devices.*

The National Fire Protection Association has issued a pamphlet under the title of "Fire Hazards of Emergency Heating," urging householders who are obliged to burn substitutes for hard coal to familiarize themselves with all the peculiarities of their new devices in order to safeguard property and lives.

After commenting on soft coal, wood, gas, electricity and ordinary oil heaters, the pamphlet devotes a chapter to "Oil Burning Equipments," meaning those devices that are installed in the firepots of furnaces or boilers. It says, in part, "The safest type of oil burning system for domestic use is that employing a pump to deliver the oil to the burner and having oil piping and the top of all tanks located below the level of the burner base. Systems employing gravity pressure feed to the burner introduce a greater hazard and should not be installed unless the recommendation of this association are fully complied with."

This article is quoted here because of the interest manifested in oil burning devices, and it will be well for installers to warn their customers against further use of oil burners of this gravity type, unless every direction of the National Fire Protection Association is fully carried out.

### *C. A. Shewell Buys Shop of Storm Lake, Iowa, Installer.*

C. A. Shewell, heating and sheet metal contractor, has bought the R. J. Peterson Sheet Metal Shop at Storm Lake, Iowa, and will continue the business.

Mr. Shewell is an old subscriber of AMERICAN ARTISAN and believes in keeping posted on the latest methods, so he is a frequent pur-

chaser of books pertaining to the sheet metal and warm air heating business.

### *Heating and Ventilating Council Meets.*

Action on various important items of business was considered at a meeting of the Council of the American Society of Heating and Ventilating Engineers held on Monday, October 16th, in the headquarters office, 29 West 39th street, New York City. In the absence of President Jay R. McColl, Vice-President Gant presided.

It was voted to accept the invitation of the United States Bureau of Standards, to hold the professional sessions of the annual meeting in Washington, D. C., in view of the favorable report received from the executive committee after their recent visit to the city. From the cordial greeting extended by Dr. L. J. Briggs, acting for Director Stratton of the Bureau, and also by the Washington members of the Society, the committee left with a strong impression that an annual meeting in Washington would be most advantageous to the members and would prove of exceptional interest.

The formal invitation from the National Exposition of Power and Mechanical Engineering to be held in Grand Central Palace, New York, December 7-13, 1922, was referred to the executive committee with power to act. The opinion was expressed that the use of a booth at the exposition would be of benefit to the Society, and with this in view, the executive committee was requested to make further investigations and take proper action.

It was recommended that J. E. Bolling be appointed chairman of the Guide Publication Committee to succeed Perry West whose resignation was regretfully accepted by the

council. The hearty thanks of the Society were extended to Mr. West for his very able work in the successful launching of the American Society of Heating and Ventilating Engineers' *Guide* 1922, and especially for the high ethical standards laid out for this volume.

### *Heating and Ventilating Nominations for 1923.*

The Nominating Committee of the American Society of Heating and Ventilating Engineers has made the following recommendations for officers to serve during 1923:

President—Homer Addams, 47 West 42nd street, New York City. First Vice-President—H. P. Gant, Land Title Building, Philadelphia. Second Vice-President—E. E. McNair, 133 East Grand River avenue, Detroit, Michigan. Treasurer—William H. Driscoll, 245 Hunters Point avenue, Long Island City, N. Y. Members of the Council—Willis H. Carrier, 750 Frelinghuysen avenue, Newark, N. J.; Joseph A. Cutler, 177 North Dearborn street, Chicago; S. E. Dibble, Carnegie Institute of Technology, Pittsburgh; E. S. Hallett, Board of Education Building, St. Louis, Missouri; Alfred S. Kellogg, 89 Franklin street, Boston; Thornton Lewis, 250 South Broad street, Philadelphia; J. R. McColl, 2348 Penobscot Building, Detroit, Michigan, and Perry West, 117 West 54th street, New York City.

For the Committee on Research the following have been nominated: C. F. Eveleth, S. E. Dibble, F. B. Howell, Thornton Lewis and William B. Reed.

If you know how to put yourself in the other fellow's place when you are considering his actions, you may be able to give him some helpful advice that will be accepted.



## Omaha, Nebraska, Has New Ordinance for Installation of Warm Air Furnaces.

*Rules Are Given for Figuring Sizes of Warm Air Pipes, Cold Air Intakes and Returns, Etc.*

THE city of Omaha, Nebraska, has through its city council recently enacted an ordinance, certain parts of which are to govern the installation or repairing of warm air furnaces.

We quote the most important provisions of this ordinance in the following, in order that sheet metal contractors and others who install warm air furnaces in other cities may consider these provisions in connection with any similar regulations which may be contemplated in their cities:

### Section 364—Warm Air Heating Plant—Permit—Fees.

Before proceeding with the installation of a warm air heating plant, or the repairing or renewal of an existing one, the contractor for the work shall first make application to and obtain from the Building Department a permit to do such work, and no such installing, repairing nor renewal shall be begun without such permit having first been obtained.

(a) The Building Department shall not issue a permit for such installation, repairing or renewal of a warm air heating plant until the plans, specifications or description therefor has been carefully inspected, ascertained that the party or parties, firm or corporation desiring to do such work are conversant with and intend to follow the ordinances relating thereto, and until such party or parties have paid into the City Treasury the following inspection fees, to-wit:

For each furnace installed, repaired or renewed, the sum of fifty cents.

For each warm air outlet installed, repaired or renewed, the sum of twenty-five cents.

Where more than one room is to be heated by one warm air register, the price charged for permits shall be fifty cents for furnace and twen-

ty-five cents for each room so heated.

(b) Inspection of new work shall be made as follows: When such work has proceeded to where the stacks to upper floors and heads for all side wall registers have been installed, and boots have been connected, the contractor for this work shall notify the Building Department, who shall make or cause to be made an inspection of such work. Upon finding that the work complies, in all respects, with the terms of this code, there shall be affixed by said inspector, or his representative, to each stack or register head a certificate stating that the work complies with the ordinance relating thereto.

(c) Inspection of repaired or renewed work shall be made, in each case, as the nature of the work shall require.

(d) Final inspection of plant shall be made after the whole is connected up and ready to operate, but before any fire has been started.

(e) It shall be unlawful for any person to lath over, plaster or cover up any warm air heating work before such work has been inspected and certificates above referred to have been attached. The Building Department shall have the right and authority to remove or order removed all such lath, plaster or other covering which may have been placed over such work before same has been inspected. The person, firm or corporation ordering or causing such work to be covered up as herein set forth shall upon conviction be subject to the penalties set forth for violation of the terms of this chapter.

(f) No heating permits shall be required for minor repair work. By minor repair work is meant the incidental repairs to furnaces, which shall not affect the general action of the system, such as renewal to

grates, smoke pipes and resetting, changing or renewing of single hot air pipes in basement; but where stacks or fittings are renewed or installed, or where registers are renewed or installed, or where other work is done that would require inspection under the terms of this section, a permit shall be required and taken out.

### Warm Air Heating Installation.

The following provisions shall be made in any building, wherein a warm air heating system is to be installed, for the reception of same:

(a) Joists shall be sixteen inches on centers, and shall be butted, not lapped. Studding shall be set directly over joists. New stud partitions, wherein stacks are to be run, shall be made of at least 2x6-inch studding, spaced to give a clear space for the stack of not less than fourteen inches, and it shall be unlawful to run any heating stacks in new partitions constructed thinner than five and five-eighths inches net width of studs.

(b) The installation of warm air heating systems shall be done in the following manner:

(c) The warm air pipes, stacks, heads, elbows, tees, angles and fittings of all kinds, including boots or footpieces, connecting the round basement warm air singles pipes to stacks or outlets, shall be made of bright tin or galvanized iron, shall be made double from and including the boot or footpiece in the basement to the top of each and every stack and register on all floors of building. There shall be a continuous, uniform air space of not less than five-sixteenths (5-16) of an inch, which must be maintained, between the outer and inner walls of all such pipes and fittings of all kinds, styles and descriptions, except the round basement pipes. Such pipes, heads, boots and other fittings shall be one of the several makes accepted by the National Board of Fire Underwriters, or their equal, as determined by the Chief of the Building Department.

(d) All pipes and fittings shall be secured firmly in place by means of lugs secured to the outer walls.

No nails or other fastenings shall be driven from the inside through to the studs or other supports.

(e) No pipes or fittings will be permitted in the work which depend upon soldered joints for connections. No joints shall be dependable upon asbestos paper. The various members shall be so made that all joints are locked or riveted and the several members shall be attached to each other through slip joints which are, for the purpose intended, air-tight. All single warm air pipes in basement shall have slip joints of not less than  $1\frac{1}{4}$  inch and all such joints shall be soldered, seamed, or riveted and not depend upon the slip joint alone. No solder required where round pipe slips over casing collar.

(f) The warm air pipes in the basement extending from the furnace to the boots shall be covered with a good coat of asbestos paper securely pasted to the pipe. No such pipe, within eight feet of the furnace, shall run within two inches of any woodwork unless woodwork is lined with asbestos-covered tin.

(g) Floor registers for warm air shall be provided with a register border or a double register box of tin or galvanized iron, with five-sixteenths (5-16) of an inch air space between the inner and outer boxes. Floor registers for warm air will only be allowed in residences where a side wall register can not be installed on an inside wall. Any furnace having no more than two warm air registers, at least one of such registers shall be without valves or shutters whereby it may be closed.

(h) There shall be a space of not less than twelve inches between the top of any portable furnace and exposed woodwork. The top of any portable furnace shall be covered with sand.

(i) All portable furnaces shall have double casings with air chambers between of not less than one inch, or a corrugated metal lining with corrugations of not less than one inch.

(j) Installation of new work in old houses shall in general conform

to the provisions of this section. It shall not be necessary to remove the plaster and lath from the walls where the new stacks are to be run, provided that stacks can be locked together and shoved in either from below or above.

(k) Cold air intakes and returns shall have a net cross section of not less than one hundred per cent of all warm air pipes leaving furnace and where this net area can not be maintained in one duct an additional duct shall be run. Connection of cold air duct or boot to the furnace casing must be so made that top of boot or connection will not be above the top of the ash-pit of such furnace. Where cold air grilles are placed in a seat or side wall (whether furnished by owner, general contractors, or furnace contractor) the openwork grille must extend to at least one inch from the floor line. In no case shall cold air be taken from the basement.

(l) Whenever furnaces, ovens, coffee roaster or other structures in which fires are maintained, except stoves for domestic purposes standing on legs and affording not less than four inches air space, are set inside a building the floor under same, if not already fireproof shall be taken out and replaced by a floor of fireproof material extending not less than twelve inches on at least three sides and four feet in front of such furnace or other appliance.

(m) All joints in furnace casings and cold air connections shall be made air tight by either soldering or covering with asbestos paper. All base rings shall be set in or slushed with cement.

(n) To determine the size of hot air pipes necessary for each room to be heated the following rule shall be used:

(1) First Floor Rooms: Divide the total area of doors and windows in square feet by 12. Divide the net wall area in square feet by 40. Divide the cubic contents in cubic feet by 800. Multiply the sum of these three values by 8. The result is the area of basement pipe required in square inches.

(2) Second Floor Rooms: Apply the same rule as for first floor rooms except multiply the sum of the three values obtained by 6 instead of 8.

(3) Third Floor Rooms: Apply the same rule as for first floor rooms except multiply the sum of the three values obtained by 5 instead of by 8.

No warm air pipe less than 8 inches in diameter shall be used. On especially long runs, over 12 feet long, the pipe capacity shall be increased in proportion. For wall stacks deduct 40 per cent from basement pipe. Transition from leader to stack shall be made with a well-designed elbow or boot and no stack shall be less than 60 per cent of the warm air pipe area.

In churches, auditoriums and houses where there is no floored attic between ceiling and roof, the ceiling shall be figured as an outside wall surface.

After the size pipe for each room has been determined by the foregoing requirements, a furnace shall be selected and installed which will produce a total number of square inches of heating ability at least equal to the sum of the areas of the pipes as above obtained.

#### Smoke Pipes.

A thimble of cast iron or of sheet metal not less than 24 gauge shall be provided in all residence chimneys where smoke pipe connects and shall have a flange on each end; such thimble to be installed by mason and shall be not less than 12 inches from any woodwork.

Where smoke pipes of diameter of six inches or less pass horizontally through a wood or a plastered stud partition, they shall be surrounded by a ventilated thimble of incombustible material with a diameter at least twelve inches greater than the diameter of the pipe.

(a) Where a smoke pipe of greater diameter than six inches passes through a wood or plastered stud partition, it shall be surrounded either by a body of brick, hollow tile, porous terra cotta or other incombustible material, measuring at



least eight inches all around such smoke pipe.

(b) Smoke pipes of less diameter than twelve inches shall be kept at least twelve inches distant from any combustible partition, ceiling or floor, and such woodwork immediately over and for a distance of two feet on each side of such smoke pipe shall be covered with sheet metal or with porous terra cotta, hollow tile or plaster or metal lath.

(c) Smoke pipes of greater diameter than twelve inches and less area than six square feet, shall be kept at least twenty inches away from woodwork. Such woodwork shall be protected as above specified for smaller smoke pipes to a distance of four feet on each side of such smoke pipe; provided, that in case of low pressure boilers used for heating purposes only, the distance from a smoke pipe to any woodwork shall be not less than two feet.

(d) Whenever smoke pipes of larger area than six square feet are used, they shall be kept at least three feet distant from any woodwork and such woodwork for a distance of at least six feet on either side of such smoke pipes shall be protected as before specified for smaller pipes.

(e) No smoke pipe shall project through any roof, external wall or window. Where a furnace is installed to burn gas or oil there shall be a smoke pipe or exhaust pipe connected with chimney.

#### Chimneys and Flues.

Interior chimneys or stacks of metal shall not be used in buildings of ordinary, slow-burning or mill construction, unless surrounded by self-supporting brick or reinforced concrete walls of the thickness herein required for flues of the respective area; provided, however, that if an interior smoke pipe of steel of not less than three-eighths of an inch in thickness riveted in every joint, or an interior smoke pipe of cast iron not less than three-fourths of an inch in thickness is used, then the brick work required inside of the insulating cavity of a stack may be omitted, but such metal lin-

ings shall be lined with such insulating material for the height herein required for metal stacks, and shall comply with the requirements for insulation of metal stacks in fireproof buildings. If a chimney or stack is not a part of the walls of such non-fireproof building, it shall be designed as an isolated chimney.

#### Reinforced Concrete Chimneys.

Reinforced concrete chimneys in which the temperature of the gases is intended to exceed 750 degrees Fahrenheit, shall be lined with fire brick, or magnesia or asbestos insulating lining, for the height and in the manner required in this code for metal chimneys. If the insulating is stopped below the top of a reinforced concrete chimney, or if the cross section of such chimney is changed, then the reinforcing shall be increased at such points sufficiently to prevent the formation of temperature cracks.

#### Height of Chimneys Above Roof.

The height of all chimneys and flues of stoves used for domestic purposes or open fireplaces shall be not less than  $2\frac{1}{2}$  feet higher than the highest point of the roof of the building on which they are a part.

(a) The height of all chimneys and flues above the highest portion of the roof of which they are a part, where such chimneys or flues are used for other than domestic purposes or for open fireplaces, shall be determined by the following formula:

$$H \text{ equals— } \frac{D}{4} \times .5$$

Where H is the height of the chimney or flue in feet and D is the greatest diameter of the chimney or flue in inches.

(b) In no case shall the height of any chimney or flue be less than five feet above the highest point of the roof of which it is a part, provided, however, that the tops of chimneys on ridge roofs shall be not less than two feet above the ridge.

(c) The tops of chimneys within a radius of twenty-five feet of any wood tank, pent house, or roof house shall be at least as high as

the top of said wood tank, pent house or roof house.

(d) Where the height of the chimney or flue complies with the above requirements, but is lower than adjoining buildings or buildings within a distance of 25 feet and creates a smoke nuisance, then such chimney or flue shall be extended to a height of not less than five feet above the coping wall of such adjoining buildings, provided such flue or chimney has an inside area of over fifteen square inches.

Chimneys for the heating apparatus of tenement houses shall not be considered as flues used for domestic purposes.

#### Framing Around Chimneys.

In case of chimneys which are enclosed or form a part of the interior of any building, no joists or girders shall rest or be supported on the walls of such chimney, and the framing around chimneys of all kinds shall be so constructed that in no case will any joists or timbers be placed nearer than two inches from the outside face of walls of flues, and in no case shall the distance from the inside of any flue to any joist or timber be less than seven inches.

#### Location of External Chimneys.

Chimneys built outside the walls of buildings shall not encroach upon any street or alley, and shall be built as follows:

(a) If at least one side of such chimney abuts entirely upon the wall of an existing building and the chimney is throughout its entire length securely and firmly anchored to the walls of such existing building, the wall of such chimney may be built of hollow tiles, in which case, however, it shall have a cast iron base, lined with fire brick, extending to a height of at least ten feet above the street or alley grade.

Isolated chimneys shall be so designed and constructed that the stress in every part thereof, due to the weight of the stack itself and from wind pressure, shall not exceed the safe limits as provided in this code for the material used.

#### Walls Forming Smoke Flues.

The walls forming smoke flues of one hundred and forty-four

square inches area or less shall be of brick, concrete, stone, cement block, or of any one of these and burnt fire-clay flue lining, and such flue linings shall extend from the bottom of chimney to two inches above the top of chimney. Such walls shall be at least four inches in thickness, except when constructed of cement block the bearing web to be not less than two and three-quarter inches, and the burnt fireclay flue lining shall be not less than three-fourths inches in thickness, and built as herein described. Such chimneys used for domestic purposes shall be not less than 8x12 inches inside dimension, and shall in all cases have the flue lining herein specified, provided, however, an 8x8 inch flue lining may be used in dwellings having a floor area of 700 square feet or less.

The flue lining shall be faced so that the smokepipe shall enter same through the 12-inch side.

(a) The walls forming smoke flues of more than one hundred and forty-four square inches area and not more than four hundred square inches area shall be built of brick, concrete, stone, or any one of these and burnt fireclay flue lining. If any of the above materials is used alone, the walls shall be not less than thirteen inches in thickness. If any one is used in combination with burnt fireclay flue lining, the walls shall be not less than nine inches in thickness, and the burnt fireclay flue lining shall be not less than three-fourths of an inch in thickness and built as herein required.

(b) The walls forming smoke flues having an area greater than four hundred square inches and less than six hundred square inches shall be built of one of the materials described above not less than eight inches in thickness, provided the chimney forms part of a wall or is not over 25 feet high if isolated.

(c) The walls forming smoke flues having an area greater than six hundred square inches shall be built of one of the materials described above not less than thirteen inches in thickness, and these walls

may be reduced to eight inches at a point not less than fifty feet above the top of the breaching; provided, however, that the material of which all chimneys are constructed shall be so proportioned that it will not be subject to a greater stress than herein fixed as the maximum safe stress for such material, and further provided the chimney forms part of a wall or is not over 70 feet high if isolated.

#### **Chimneys Construction.**

All brick flues shall be built of good, well burned, well shaped, merchantable brick, thoroughly slushed, with joints struck throughout, and shall be securely built into the brick work of the walls to which they are hung. All chimneys shall be capped with either stone, iron, terra cotta or concrete properly secured. In no case shall a nail be driven into the walls of any flue less than eight inches thick.

(a) No chimney shall be allowed to rest or bear upon wood. All chimneys in frame buildings must be started at the foundation and run true and plumb from bottom to top; provided, however that the Chief of Building Department may, at his discretion, permit small chimneys to be built upon substantial wooden or other platforms the full size of said chimneys. It shall be unlawful to support chimneys upon wooden brackets.

#### **Hearths and Grates.**

All hearths shall be supported by trimmer arches of brick or stone, or shall be supported by a single stone or slab of reinforced concrete, not less than four inches thick, properly supported. One end shall be securely built into masonry of chimney or adjoining wall.

(a) Every fireplace, range or grate opening shall have brick jambs at least eight inches wide; shall have rear wall at least eight inches thick; shall have smoke outlet drawn into flue in not less than two feet above top of opening into room and brick work over such openings shall be properly supported by iron or steel lintels or brick or stone arches.

(b) All hearths and supports for same shall be at least twelve inches

longer at each end than the width of the fireplace, and extend out from the face of the chimney breast at least eighteen inches.

#### **Ventilating Ducts and Chutes.**

Walls forming ventilating ducts and rubbish and ash chutes shall be constructed in accordance with the regulations governing the construction of smoke flues herein described.

If any chimney, flue or heating apparatus of any premises shall, in the opinion of the Chief of Building Department endanger the premises, he shall at once notify in writing the owner or agent. If such owner or agent fails, for a period of forty-eight hours after the service of such notice, to make such chimney, flue or heating apparatus safe, he shall be liable to a fine of not less than twenty (\$20) dollars nor more than fifty (\$50) dollars for every day's continuance thereof.

#### **Rebuilt or Re-Topped Smoke Flues.**

All smoke flues which are found to be defective must be rebuilt or re-topped and the rebuilding shall begin at least three courses below the roof. Each flue shall contain an approved fireproof lining at the point where such flue passes through the roof. The lining shall consist either of asbestos or burnt fire clay flue tile, shall be at least twenty-four inches in length and shall be securely held in place at the point of installation by being built into the exterior material, and shall be so constructed as to provide against cracking of the lining in case of expansion, contraction or settling of the exterior material used in constructing the flue.

#### **Clothes Chutes, Dumb Waiter and Shafts.**

All clothes chutes, dumb waiter shafts, pipe shafts and other enclosed spaces of similar character extending from one story to another, where not required by this code to be built of fireproof materials, may be lined on the inside with sheet metal having lock joints if a layer of one-half-inch plaster board is placed between the sheet metal lining and the woodwork. All openings may be closed with tight-fitting metal-lined covers or doors.



### Cornices, Eaves, Gutters and Leaders From Roof.

No wood shall be used for any purpose in connection with cornices, eaves and external gutters on any building more than fifty feet in height. The entire exterior covering of cornices and eaves of buildings hereafter to be erected within the fire limits shall be of incombustible material.

(a) Wherever sheet metal cornices or eaves or gutters are used, their entire exterior covering shall be of metal or of other incombustible material approved by the Chief of Building Department. Bracket supporters for same shall be firmly secured to the walls at least every four feet, and the walls shall be carried full height under and behind same throughout their entire length.

(b) The roof of every building shall be maintained in good repair and all rain water shall be so drained or conveyed therefrom as not to drip on the ground or cause dampness in the walls, yard, courts or areas.

(c) All buildings now inside the corporate limits, and every building hereafter built, shall be provided with suitable water-tight leaders for conducting the water from the roof. Such water shall be conducted from the building and to the sewer in metal pipes, provided, however, that if, in the opinion of the City Engineer the connecting of the downspouts or leaders to the sewer would cause same to flood the building, or if such building is located outside a sewer district, such leaders and conductor pipes shall be so located and run that the water shall be discharged at the street gutter or alley gutter. It is specifically declared unlawful to so discharge rain water that it will flood either the premises on which such building is located, or adjoining and contiguous premises.

(d) Stone and terra cotta cornices shall be so made and placed that the greatest weight shall be on the inside of the wall, or other means shall be taken to properly secure same to the satisfaction of the Chief of Building Department.

### Penalty.

Any person, persons, firm or corporation who violates, neglects, or refuses to comply with, or who resists or opposes the enforcement of, any of the provisions of this code, which do not provide for a specific penalty for such violation, neglect or refusal of compliance, shall, upon conviction, be fined not less than ten dollars (\$10.00) nor more than one hundred dollars (\$100.00) for each offense, at the discretion of the Court, and every such persons, persons, firm or corporation shall be deemed guilty of a separate offense

for every day on which such violation, neglect or refusal shall continue; and any builder, contractor, agent or owner who shall construct, or cause to be constructed, any building, any part of such building or structure or device in violation of any of the provisions of this Code, and any architect, or other person, designing, drawing plans for, or having charge of such building, or part of such building or structure or device, or who shall permit it to be so constructed, shall be liable to the penalties provided by this Section.

## Are You Unconsciously Putting Brakes on Your Warm Air Heating Plants?

*R. W. Menk Says That Many Installers Are Reducing the  
Capacities of Furnaces By Failure to Allow for Friction.*

**R.** W. MENK, the well known warm air heating engineer, discussed "Brakes in Warm Air Heating Plants" in an article published in our September 30th issue, on pages 25 and 26, and herewith follows a sequel to this article:

Some readers seem to have become quite startled and others confused over the large cold air areas proposed in the last article of the *Bulletin*, and, therefore, before continuing with the same, one more explanation may be the means of clarifying what was said.

You no doubt recall the statement that we seldom take over 450 inches of area from any one location, or equal to a 24-inch pipe.

The example called for 600 square inches, which would be the area for an ordinary eight room house; and depending upon the design of same would call for two or more returns—and sometimes three or more. Therefore, if each duct is worked out upon the basis of the factors indicated, it will be found that the increase in the sizes of the ducts will not cause them to be unusually large.

Now let us consider where the brakes are still further in operation. Let us assume again that the installation has 600 square inches of

warm air pipe area, and that 400 square inches are supplied to the first floor and 200 square inches to the second floor. Where then shall the air be taken from?

Years ago, and still in practice in some localities, it was the custom to place a large cold air return in the hall, and many times in the side of the stairway at that. Now let us assume that a hose was turned into the rooms on the first and second floors, and suppose that the water was cold air. It would then be necessary to throw the water upon the outside walls or exposed surfaces (for it must be admitted that these points are where the cold air comes from), allowing the water to flow to the cold air ducts. Then let us start in the kitchen, which we will assume is at the west end of the house, and in order for it to reach the cold air duct it must flow through two or three rooms before it reaches the duct (possibly in a zigzag manner), and I ask you the question: Will it reach the duct if in its path there are several warm air registers?

I will leave it to your judgment to decide.

The above, of course, is also true of the other rooms. What would happen if all the warm air registers

were protected so that the water could not fall into them?

It must be admitted that there would be quite a rush to the duct, whether it be water or air, and especially if a strong wind were blowing I doubt if it would be very comfortable to sit in the path.

Now let us consider what is happening upon the second floor. Very naturally the water would rush down the stairway (unless, of course, there were registers in its path), but assuming that such was not the case, the water upon reaching the foot of the stairway would be banked against such walls or obstructions as were in its path and in some cases would have to make four or five right angle turns before it reached the duct. Can you imagine how much resistance there would be in an installation of this kind, and how much better the flow would be if the duct was at the foot of the stairway?

Now let us suppose that a blizzard is raging, and the wind and snow were whistling around the house. Where would the proper place or places be to pick up the cold air, if an ideal warm air heating system was the consideration? If the cold air returns were at the outside walls and at the exposed places, how much more positive and rapid would the circulation be than if it had to flow to some central point or hall! And can you imagine how much better flow of warm air there would be if there was not this resistance of cold air against them?

What would the radiator man say if you told him you wanted all of your hot water radiators on inside walls? And suppose he put them there, would it be comfortable to sit between them and the windows or exposed surfaces?

A good demonstration of the effect of cold air upon warm air is to set a pipe over the warm air register, or, better still, is to set a pipe over the warm air section of a duplex grating of a pipeless furnace.

In this article and the preceding one it has been my aim to present examples, and to allow you to form

your own conclusions, which will cause the person who reads them carefully to pay more attention to the results his installations are giving.

In addition to what has been said: How carefully are you inspecting the building constructions for leakages and defective chimneys?

Sixty-five per cent of all buildings leak like sieves, and fifty-five per cent of all chimneys are defective!

*Are you installing warm air heating systems, or only selling hot air furnaces for cash profits?*

### ***N. A. Middleton Is President of Ohio Body and Blower Company.***

D. K. Swartwout, president of the Ohio Body & Blower Company, Cleveland, and Herman H. Lind, vice president, have resigned. N. A. Middleton, of Boston, has been elected to succeed Mr. Swartwout.

### ***Estimating the Amount of Oil You Will Burn.***

A manufacturer of automatic domestic oil burners has worked out the table given below. While it is actually based on the performance of the particular burner manufactured by this firm, it is reasonable to assume that the same amount of oil will heat approximately the same space in any well-designed burner. The start has one feature that needs some amplification: while  $6\frac{1}{2}$  cents is a fair and average price to use, assuming a heavy fuel oil is used, it is not high enough if distillate must be used in the burner, as is true of many automatic, domestic burners.

Roughly, 100 gallons of oil will do the work of one ton of anthracite coal. Therefore, if you now use twenty tons of coal per year, you will use about 2,000 gallons of oil per year.

Twenty tons of coal at \$15 per ton delivered, \$300; 2,000 gallons of oil in 500-gallon lots at  $6\frac{1}{2}$  cents per gallon, \$130; saving, \$170. From this deduct cost of electricity, estimated at \$3 per month, \$18;

gas per month, \$6; total \$24; gross saving, \$146.

Plus—cost of services of furnace attendant, cost of removing ashes, cost of your time, value of its safety, value of its simplicity and value of its reliability.

### ***H. Jackson Heads Milwaukee House of Meyer Furnace Supplies.***

Another link in the chain of distributing houses established by the Meyer Furnace Company and F. Meyer & Brother Company, Peoria, Illinois, has been added by the opening of the Meyer Furnace & Supply Company, 174 Reed street, Milwaukee, Wisconsin.

Harry Jackson, who is well known to the warm air furnace trade and who has been one of the prominent men in the Meyer selling organization for several years, is in charge of the new house.

### ***This New Money Stunt Will Bring Trade.***

This idea is a "stunt" which will be found effective in small towns, suburbs or neighborhoods only. It is one which will place any store on the tongue of residents of such a locality.

Have your bank obtain newly coined pennies, nickels, and silver money sufficient for your week's change. Pass it over your counters turning in the old money to your bank. Pay your employes and all local bills in the new money. The result will be that at the end of a week the new money will be well distributed in your locality.

Then head your next advertisements: "Have you any of the newly coined money?" followed by copy which tells about the amount of it passed out by you during the preceding week, together with a store editorial about the application of the new money to the policy of your store where new goods are arriving regularly, etc. Then follow with a list of new merchandise which you are offering as features. Your bank can obtain new money from its correspondent in New York or Chicago, or wherever a mint or sub-treasury is located.



# Practical Helps and Patterns for the Tinsmith.

Aids to the Improvement of Craftsmanship and Business.  
News from Various Branches of the Sheet Metal Trade.

## Three Way Bull Head Branch.

By O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri. Written especially for American Artisan and Hardware Record.

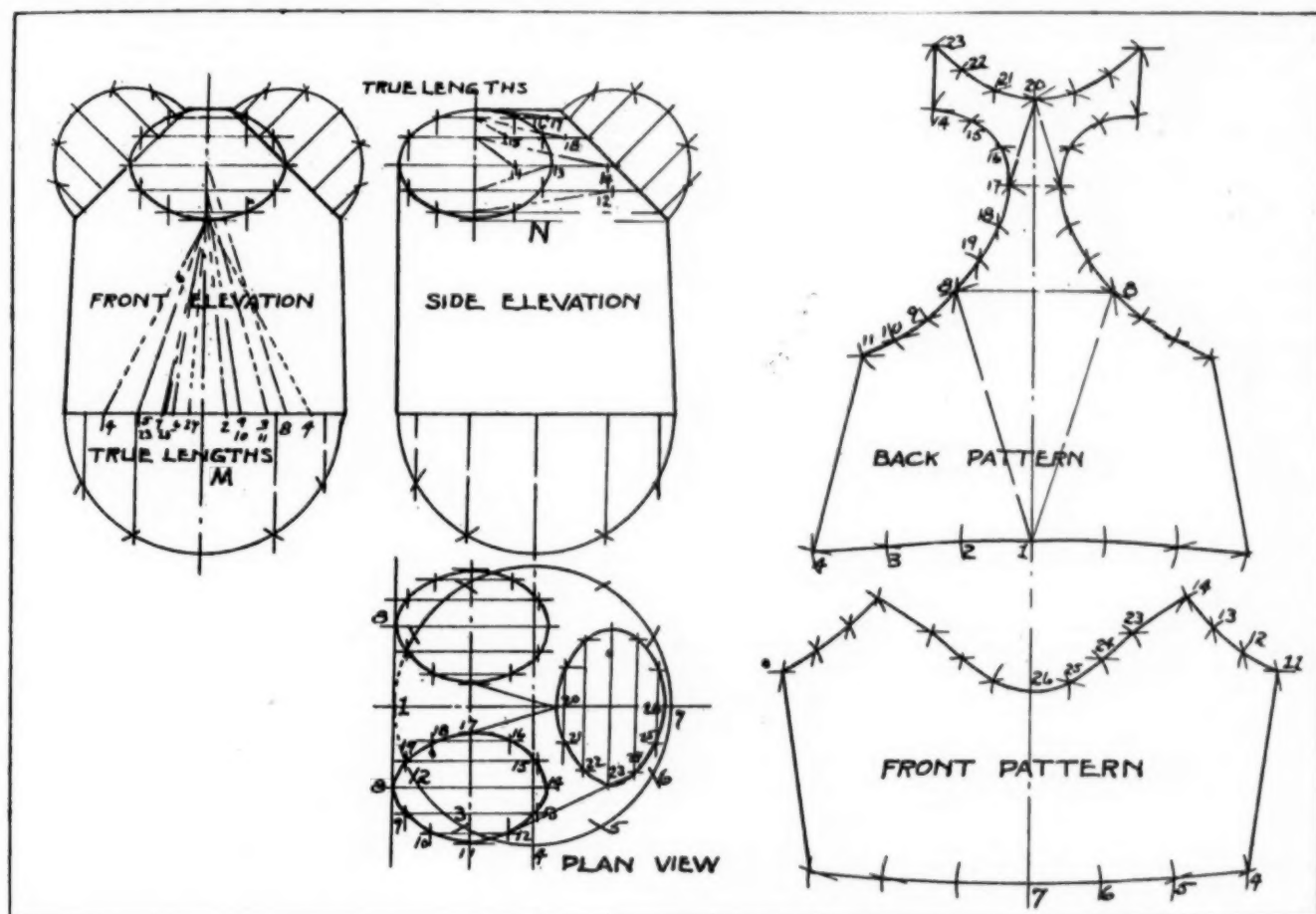
In our drawing we show a bull head fitting that is straight on the back side and is designed on the order of a stub branch.

bounding it retards the other air in back of it and hence, it is not as satisfactory as it should be.

If the air is to be led from the branches into the large pipe, then this design has the fault of creating pockets, which is also not a good condition because this process enables an expansion of the air thus causing it to drop some of its sub-

wider the space between the collars, the greater the friction that is produced.

Next detail the side elevation developing the ovals by adjusting the lines in the manner shown. After this develop the plan view projecting your lines from your side elevation, or picking them from your ovals of the elevation and setting



Development of Patterns for Three Way Bull Head Branch.

Fittings of this kind are often substituted for those of greater taper because the shops feel some saving in time is made and possibly no other method is known to develop the fitting.

Owing to the abrupt method of starting these collars, in the bull head, a great amount of friction is produced, because the air will strike the solid blunt divisions and rebound. During this process of re-

stance where other air must come along and pick it up again. Hence, a fitting of this kind is more of a problem of development than a practical fitting from an engineering view point.

To lay out such a fitting, first draw the front elevation placing the side openings and the base as shown, giving as narrow a space between the openings as convenient for assembling the collars. The

them in plan thus giving you the shapes shown in plan. After this, develop the true lengths for the main body as at M and for the collar straps as at N.

When this is done the pattern for the back may be laid out as shown above, working from one point to another, thereby making the layout as shown. In the same way the pattern for the front is laid out, working from one point to the

other, and picking the true lengths from the diagram while the girth spaces are picked from the half sections.

### ***Ready Roofing Material Sales Tripled Because of Advertising.***

In considering the subject of "Collective Advertising," or "Individual Publicity," think of this:

In 1915, the prepared asbestos and other ready roofing interests spent \$272,000 in advertising; in

1919, \$750,000. In 1914, the sales of these roofing materials were 11,107,000 squares; in 1919, 30,000,000 squares. Will you note the steady pull in sales from the additional advertising? Can any one doubt that increased sales in composition roofing has been in direct ratio to the amount expended for advertising? Quickened the consumer's interest in any product he is using, and he will be a much larger buyer of it than if his interest is only latent.

## ***Use of Sheet Copper Is Making Great Headway Among Builders, Architects and Contractors.***

***W. A. Willis Discusses Encouraging Reports of Sales of Sheet Copper for Building Purposes.***

**A**T the meeting of the Metal Branch of the National Hardware Association during the recent Atlantic City Convention, W. A. Willis, Manager of the Copper and Brass Research Association, delivered a very interesting and instructive address on the "Sheet Copper Situation," which, because of its high importance, we are glad to publish in full:

To discuss the sheet copper situation before a group of metal dealers who perhaps are in existing circumstances more materially interested in the promotion of other sheet metals for general construction purposes, is a somewhat delicate task. My good friend, Mr. Brophy of the Anaconda Copper Mining Company, discovered this when he talked to the Metal Branch in Cleveland last June. Looking over the proceedings of that convention, I find that the first reaction from Mr. Brophy's eloquence came from one Mr. Taylor, who said:

"Mr. Brophy's address has been very interesting. However, I notice he never said anything about the profit we get out of it."

Mr. Taylor's comment is perhaps as apt now as it was last June and therefore it seems fitting that I should say a word or two on this point. The Copper and Brass Research Association, with which I am associated, is an organization of producers of copper and fabricators of copper, brass and bronze. Today it represents approximately 90% of the mining companies and 50% of the rolling mills, the most notable absentee from our roster being the American Brass Company. This company, however, is not only deeply sympathetic with the work the Association is doing, but is itself carrying along a somewhat similar campaign, from which all of those interested in the sale of copper and copper products are profiting.

The work of a cooperative association such as ours is necessarily hedged about

by certain restrictions. Some of these are self-imposed, some are imposed by federal statutes, the most notable of which is the Sherman law. The Copper and Brass Research Association would fail utterly in its main objective if it allowed itself in even the smallest way to interfere with competitive effort, or if, as an Association, it permitted itself to intrude on the personal business affairs of its member companies.

### ***Encourages Competition.***

On the contrary, the Association has functioned, and will continue to function with a view to stimulating competition. Through public education and through technical and commercial research work, the Association seeks to increase the demand for copper, brass, bronze and copper products generally. Such business as it succeeds in creating will be absorbed by its member companies exactly in proportion to their individual enterprise and alertness. And so we have urged on our member companies advertising and publicity campaigns of their own to supplement the Association effort, a field of activity in which most of them, I am glad to say, have embarked.

At your June convention a committee which had previously been instructed to confer with the so-called American Brass and Copper Statistical Exchange on the question of increased commissions for handlers of sheet copper, was revived and instructed to carry on similar negotiations with the Copper and Brass Research Association. I want to say for this committee that it became immediately active, and that the long delay in bringing about a conference was due to my inability to meet with the committee. However, we did finally get together and had a most amicable and I think mutually profitable talk at Mr. Fernley's office in Philadelphia. There the situation was discussed with the greatest friendliness and frankness.

Boiled down, it resolved itself into this: that the handlers of sheet metal are unable to obtain from the sale of copper more than about one-third the profit for themselves that they earn from the sale of other metals; that their com-

mission on copper, approximately 5%, does not begin to meet the percentage of business overhead and therefore the copper mills should devise some way in which the dealer will be able to obtain a reasonable return on his sales of copper. It was very forcibly brought to my attention that as a result of the Association's educational effort, demands for copper were steadily increasing, that dealers generally were not only willing but anxious to take advantage of this situation, but that they would be unable to do so in full measure unless some better arrangement could be made with the mills.

It would be foolish for me to say that a situation such as that portrayed was of no concern to the Association. Anything affecting the sales of copper and copper products is of concern to us. Conditions which tend to nullify the effect of advertising on which we have spent thousands of dollars in the last six months are worth the consideration of all of those who have put their money into our campaign.

### ***Discount Not Association Matter.***

But, gentlemen, there are things which an association such as ours can do and things which as an association it cannot do, no matter how much it would like to. The business relations existing between a mill manufacturing copper sheets and a firm distributing those sheets to the consumer, cannot be made an association affair. If as an association we said to a rolling mill representative: "You are not paying the dealers a sufficient commission; you must arrange to increase their margin of profit," our attitude would be resented and very properly so; in fact, we would be fortunate if the Department of Justice did not give us a call.

However, as an association there was no legal or moral reason why we should not bring a situation of this character unofficially to the attention of our members who manufacture copper sheets. This I told your committee I would do, and I said at the time that I believed that our fabricators would give the matter careful consideration and would be glad to remedy any condition that they were convinced was unfair or that operated to check the flow of our metal to the consumer.

I made a very full report of this conference to Mr. Agassiz, the president of our Association, and in a letter to him I said:

"You will understand of course that the work of the Association would be greatly facilitated by any individual action which tended to bring about a better and more sympathetic feeling toward sheet copper on the part of those who have direct dealings with the public."

In his letter transmitting my report to our fabricator members, Mr. Agassiz concurred in this view but agreed that the matter was one in which the Association, as such, could not properly take action. However, he did refer it to our sheet members as a matter for thought, and thereby as a producer showed an interest which I have no hesitation in telling you is a real one, and shared by our producing members generally.

I confess that I did not know just how our sheet copper members would receive my unofficial trespass into their private business arrangements. I am happy to say, however, that they accepted it in the very finest spirit and I believe that they now have this whole subject under consideration. The matter has so close a relation to the very im-



portant problem of an adequate distribution of stocks that I feel certain there will be an early solution that will be mutually satisfactory. It must not be forgotten, however, that the rolling mills of this country have steadily lost money for two years, and they may be forgiven if they want a little time to see business results in black figures instead of red, before making radical changes in their selling methods.

#### Must Have Full Cooperation.

You gentlemen know as well as I do that an association such as ours can only be successful by winning the cooperation of those who handle our products. If I should tell you of the amazing sums of money wasted in cooperative effort by industries which did not make the good will of the dealers an objective, you would be appalled. We started out along two lines of activity; one aimed to get the confidence and help of the architects, the builders, the sheet metal dealers, the hardware men, the plumbers and others who have direct or indirect influence on investors in building enterprises; the other aimed at the consuming public. We felt that if we could once get the man on the street to understand the superiority of copper and copper products over other commercial metals in those fields in which long life, uniform service, absence of upkeep expense and resistance to corrosion are required, we would have no difficulty in bringing them once more into general use despite the handicap of a slightly higher initial cost. We also felt that if we could show the dealer that we were spending hundreds of thousands of dollars advertising his business we would have not only his sympathetic interest, but his active support.

Our reactions up to date have been most agreeable. The success with which we have met, and I say unhesitatingly that we have met with success, has been far ahead of anything we expected in so short a time. This would not have been possible but for the cooperation of dealers in our products, thousands of whom are today working with us. I have talked with sheet metal dealers and contractors in New York, Philadelphia, Chicago, St. Louis, Boston and other American cities, and everywhere I have been met with the finest supporting spirit. Naturally, some of those I have talked to have brought to my attention the same problems that I have just been discussing. I have told them, which is the fact, that most of these problems are as old as the industry itself, and they cannot be entirely solved overnight. The greatest aid to solution lies in a steadily increasing demand, and this our Association is fostering in every possible way. When you held your convention last June our work was in its infancy, had, in fact, been under way only about two and a half months. Yet one of our members said then:

#### Copper Sales Five Times Greater.

"I will say, for one, that as jobbers, we have sold more copper in the last ninety days than we ever have sold in our history, and I think it is largely due to the campaign they put on."

One of our Philadelphia members told me a short time ago that the sales of sheet copper in his city during 1922 will be more than five times as great as ever before in the history of the industry. I should like to hear from some of your members before this meeting closes how the sales of sheet copper during the last ninety days compares with the sales during the preceding ninety days. It is only

through the testimony of you dealers that we are able to arrive accurately at the results of our work.

I should like to tell you very briefly what our Association is doing to increase the sales of sheet copper. We have steadily advertised the metal for general roofing purposes in magazines whose scope of influence is national, and in professional, trade and technical publications. This advertising has cost us from \$100 to \$7,000 a page. Up to the present time 20,000,000 pages of our advertising has appeared. This, of course, represents actual circulation of the media employed. The average magazine figures from three to five readers to each copy, and on that basis you will see that our message has been pretty well distributed throughout the country; in fact, throughout the world, for among our reactions have been inquiries concerning American sheet copper from Palestine, Java, the Straits Settlements, British Congo, the Philippines, Canada, Mexico, Porto Rico, Costa Rica, China, Hawaii, Colombia, Spain, Italy, England, Holland, Roumania, Brazil, Australia, Venezuela, the Argentine and Japan.

#### Excellent Booklets on Application.

Because of widespread ignorance concerning the proper application of copper, we had prepared a manual for the use of architects, contractors and roofers, which is perhaps the most complete thing of the kind ever compiled. The most obscure village tinsmith, with this manual, has no excuse for making an improper application of copper. The importance of this, you gentlemen will understand, lies in the fact that while copper makes the best roofing in the world when properly applied, it is apt to be the most useless of all materials if laid without proper provision for contraction and expansion.

We have supplemented our copper manual with a book for the layman, telling all about the advantages of copper, which was prepared for us by one of the best known writers in the country on architectural subjects. This book has attracted wide attention and has brought us thousands of inquiries leading directly to actual sales of copper to people who otherwise would not have considered our metal. We also have issued a sheet on valley flashings with sketches showing how they should be applied, and now have on the press a book on flashings for which we know there is a real need. A series of leaflets to be used as envelope stuffers also has been issued and these are distributed by dealers to their customers, the Association furnishing them imprinted with the names of the individual firms. One of these leaflets dealing with sheet copper has been in such demand that we already have printed and distributed a half a million of them, and a new edition is now on the press. Altogether we have spent more than a quarter of a million dollars this year in our educational and research work and frankly we feel we have wrung the last cent of sales value out of each of these dollars.

#### Working on the Builders.

The Association subscribes to the Dodge service which gives us the names of all prospective builders in the states east of the Rocky Mountains. We immediately get in touch with these investors in building enterprises, telling them our story. Since April we have communicated with 30,000 of them, and 10%, or 3,000 of these, have established contacts with us. In 75% of these cases our work has sold the writer on copper.

I do not believe there is a sheet metal man present who has not directly or indirectly had business brought to him by this service, for we have you all listed and the day we get an inquiry we furnish the writer with the names and addresses of all of the sheet metal dealers and contractors in his vicinity.

We believe that this country is in for better times. We are not looking for any wild boom to be unleached, but for a steady, substantial improvement. For the first time in two years the preponderance of informed economic sentiment seems to be agreed that the tide of business has definitely turned for the better. A survey just completed by our Association shows that approximately five billion dollars were expended in building construction in the United States in 1922. It is not wise to infer from this that 1923 will be a ten billion dollar building year, because it must be remembered that a very large percentage of the 1922 building was of the much needed small residential character. Next year's building, it is believed, will run more to large residential and industrial building construction. What it will mean in dollar values can only be conjectured, but reckoning a natural lowering of both materials and labor, it should certainly reach the figures of 1922, which will be enough to keep all of us busy.

The consumption of copper in 1922 building is estimated at 150,000,000 pounds. Of this, 68,000,000 pounds went into sheet metal work other than roofing, and 50,000,000 pounds went into roofing. The total figure I have given you on copper consumption is an increase of 100,000,000 pounds over 1921; 96,000,000 pounds over 1920, and 73,000,000 pounds over 1919. The size of the potential market for copper and brass in the building industry may be gauged from the fact that if all the buildings constructed this year had used copper and its products where they logically should have been used, the consumption of copper in this industry for the year would have been upwards of 650,000,000 pounds.

#### Use Only High Grade Sheet Copper.

Now, gentlemen, I want to say a word about sheet copper quality. I may be mistaken, but it is my impression that I have heard that those who handle the vast tonnage of sheet copper marketed every year have little or no personal knowledge of the quality of the metal which they handle. It is not that they are not interested; merely that it is a phase of the situation they have never considered. Nevertheless it is an important truth that there is good copper and there is poor copper, just as there is good and bad everything else. When copper goes to a refinery for final treatment it contains many impurities, although these impurities represent but a very small percentage of the whole. Through electrolytic treatment these impurities are removed, so that first class primary copper goes to a rolling mill for conversion into sheets about 99.9 plus pure, which is about as pure as it can be made. Your customers will have no trouble with such sheets; in fact, the percentage of purity could be even a shade less than this.

But if your copper is 99.6 or 99.5, or lower it is not what we call the best copper. The principal impurity that it contains is oxygen, and the oxygen area is where destructive forces strike. If you sell low grade copper sheets and they pit, eat away or yield too readily to galvanic action when improperly brought

into contact with iron or steel, copper is blamed. The metal gets a black eye which it does not deserve, and we are charged with misrepresentation for saying that copper is everlasting.

The primary copper produced by the mining companies connected with our Association is of the highest obtainable purity. The same may be said of the sheets turned out by the fabricator members of our Association. But there are producers who do not refine to the highest possible point of purity, and there are fabricators who roll sheets not up to our standard. We have recently analyzed sheets rolled in Germany and Belgium, a few of which have been offered for sale here, and found them as low as 99.17. We have seen English sheets as low as 99.6. We do not want such copper used in the United States because it would not stand up. Under the microscope this copper readily reveals itself. The structure of the metal is seen to be stretches of 100% pure copper, divided by irregular lines, much like a picture puzzle. These lines, known as utectics, are oxygen which having an affinity for copper has absorbed the metal. In the best grade copper these lines are very thin, scarcely discernible, showing that all but an infinitesimal amount of the oxygen has been removed from the copper. In low grade copper these lines, known as the utectic areas, are of varying widths, showing the presence of too much oxygen. Such copper will not give the service we claim for the metal, developing pin holes and becoming soft and spongy in spots after a few years of service. You gentlemen cannot afford to handle such copper; we cannot afford to have you do it. It seems to me quite reasonable that you dealers, through this organization, might set a standard of purity for the sheet copper you will handle.

The Copper and Brass Research Association still is in swaddling clothes, but it is a lusty youngster and growing fast. I wish it could be an immediate cure-all for all the ills of the collateral branches of the industry, but it has its limitations. It can, however, be counted on to do all in its power to foster the interests of those who handle its products and we want you to call on us for any service which we can render.

### ***How to Repair or Solder Chipped Enamel Ware.***

The hardware store with a sheet metal shop in connection can add to the profits of the department materially by advertising that enamel ware can be repaired in the shop. The method of repairing described in the following may not be generally known, so we are glad to give it further publicity:

Oftentimes a piece of new enamel ware or granite ware will become chipped, exposing the iron. This will soon begin to rust and before long will become a hole. Usually the piece is then discarded—long before it would otherwise have become necessary. If taken in time

the rusting can be prevented, or if rusted through, it can be repaired quite easily with solder. For this job it is necessary to have some chloride of zinc soldering solution, some "half and half" solder and a soldering copper.

First scrape all the exposed iron perfectly clean and bright with a knife. Next apply a little soldering solution and with the hot, well tinned soldering copper, cover all the exposed surface of the iron with solder. Hold the soldering copper on the parts to be soldered a sufficient length of time to allow the metal to become heated up to the melting point of the solder. If done too hurriedly, or if the soldering copper is not hot enough the solder will not stick. Wash the finished job with clean water to remove all trace of the soldering solution. This method of repair has been quite thoroughly tried out and seems to prove successful.—J. G. Dent, instructor in agricultural engineering at the University of Minnesota.

### ***This Table Shows Comparative Weights of Roofing Materials.***

One of the important factors to consider in connection with the selection of roofing material is the weight, and it is worthy of note that with the exception of hard lead shingles all types of metal roofing are lighter per 100 square feet laid than common wood shingles.

The following table gives a basis for comparison of the various types of roofing material:

	Pounds.
Shingle Tile .....	1200—1800
Spanish Tile .....	650—850
Slate .....	450—675
Felt and Gravel (or Slag) .....	400—625
Asbestos Shingles ....	300—650
Hardlead Sheets .....	210—325
Wood Shingles .....	200—300
20 gauge Galvanized Iron (Corrugated) .	225
16 ounce Copper (Stand- ing Seam) .....	125
Copper Shingles .....	84—100
Tin .....	75
Zinc Shingles .....	75

It is to be remembered in this connection that the heavier the roofing material, the heavier must also be the frame work supporting same, and that means necessarily additional cost.

### ***Michigan Sheet Metal Men Meet February 26, 1923.***

The Michigan Sheet Metal and Roofing Contractors' Association will hold their next convention in Bay City, February 26, 27, 28 and March 1, 1923, according to action by the Board of Directors. Otto Schwartz, Detroit, is president, and F. E. Ederle, 1121 Franklin Street, S. E., Grand Rapids, is secretary.

### ***Forty Years a Subscriber, He Wants to Stay on List.***

TO AMERICAN ARTISAN:

Enclosed please find check for \$2.00 in renewal of my subscription for AMERICAN ARTISAN.

I have been a subscriber for your excellent journal since back in the early Eighties and still find it very valuable, always ready and able to help a fellow out of difficulties.

All sheet metal workers should have a copy of AMERICAN ARTISAN every week—even if just to glance through it if too busy to do any more at the time. It is really surprising how much real help you give us.

Yours truly,

T. B. CALLAHAN,

—, Ohio, October 24, 1922.

### ***Road to This Heaven Paved with American Tin.***

Few persons who work with tin will think of associating it, however remotely, with prayer. Yet there is a portion of the world where it plays an extremely important part in this ceremony—where, in fact, without it, the population would have a hard time praying at all.

It is in China that tin occupies this elevated position. It is imported by the city of Swatow in huge quantities—the aggregate of slabs in 1921 was 2,182,600—and beaten by natives into sheets of



gold-leaf thickness. Then it is pasted upon native paper, covered with a few mystic letters, and sent all over China as joss paper or "spirit money"—to be burnt by the population as an offering to its gods or as a bribe to its devils.

Before beating it, the Chinese workers melt the tin with rosin and other ingredients, which are calculated to add to its religious value. Then they reduce it to the requisite thinness by beating it between cloths, much as gold is beaten between parchment.

More than 10,490,000 tons of this transmitted tin was exported from Swatow last year, and the amount will run higher for 1922. The metal formerly was imported altogether from England, but, for the last two years, the most of it has been sold by this country.

### ***Sheet Metal Contractors Stand Next to Low for Credit Losses.***

Out of the thirty-eight industries listed by the American Indemnity Company, sheet metal stands second in credit losses. Surely this is a splendid credit record for the sheet metal trade. It has long been the belief among those well-informed as to credit losses that there was as little money lost through the extension of credit in the sheet metal industry as any other. This statement by the American Indemnity Company verifies and justifies that belief.

### ***Self-Interest Urges Education of Sheet Metal Employees.***

Increased business in the sheet metal industry is dependent on the proper education of employees. Every industry is advancing; there is no standing still in business, and any trade or industry that does not educate its employees must in the very nature of things lag behind. There is no reasonable excuse for short-sightedness on the part of any great number of employers. The public schools, vocational education, etc., while most commendable, do not within themselves meet the re-

quirements, but fall short of them. The building trades are composed mostly of a very large number of moderately sized firms employing a comparatively few men each. This renders it all the more imperative on the part of the individual employer to educate his own employees to the requirements of the business.

### ***Fight to Overcome Difficulties, Rather Than Avoid Them.***

Probably you have read the joke about the man who told his secretary to make an appointment for him in Schenectady, and when he found that neither he nor his secretary could spell Schenectady, told him to change the appointment to Troy. We laughed at that as a good joke, but do you know, when you stop to think about it, the joke loses its flavor. It so aptly illustrates a failing that has been the stumbling block in the path of so many young men and women—the wish to avoid difficulties or possibly, better expressed, the lack of willingness to attempt to surmount difficulties.

### ***Business Has Created All the Comforts We Enjoy.***

Business is work and service. It has built the world from the weary ages when men roamed in the woods seeking daily food, ate raw meat and clothed himself in the skins of animals, slept in caves and prostrated himself in terror before the phenomena of nature, to the present era of civilization, enlightenment, comfort, reason, and progress in every direction. Business taught men to save, to provide for the future, to build homes. It invented money and good uses for it, stirred the imaginations of men to achievement on land and sea, brought government into being, and established human rights and liberty. Business made all that we enjoy today necessary, and we dare say, made the warm sun of happiness to shine on the security won through centuries of disorder and ignorance.

## **Notes and Queries**

### **Address of Illinois Malleable Iron Company.**

From Stove Dealers Supply Company, 310 Chestnut Street, Milwaukee, Wisconsin.

Kindly inform us where the Illinois Malleable Iron Company is located.

Ans.—1801 Diversey Parkway, Chicago, Illinois.

### **Perforated Strap Hangers.**

From Taplin Furnace Company, Grand Rapids, Michigan.

We would like to know who makes what is known to the heating trade as perforated strap hangers.

Ans.—The Crawford Company, 3220 West 31st Street, Chicago, Illinois.

### **"Gem" Furnace.**

From William Foster Metal Products Company, 219 South Fourth Street, Springfield, Illinois.

Can you tell us who makes the "Gem" furnace?

Ans.—Robinson Furnace Company, 205 West Lake Street, Chicago, Illinois.

### **Address of Faultless Stove Works.**

From Stove Dealers Supply Company, 310 Chestnut Street, Milwaukee, Wisconsin.

We should like to know where the Faultless Stove Works are located.

Ans.—St. Charles, Illinois.

### **Gloves for Sheet Metal Men.**

From Chicago Furnace Supply Company, 1278 Clybourn Avenue, Chicago, Illinois.

Please advise us who makes gloves having rivets and burrs, for use of sheet metal men.

Ans.—Hickory Steel-Grip Glove Company, 2640 North Maplewood Avenue, Chicago, Illinois.

### **Sheet Lead.**

From Knapper Sheet Metal Works, 216 East Walnut Street, Kalamazoo, Michigan.

Kindly inform us where we can buy sheet lead.

Ans.—S. Birkenstein and Sons, Incorporated, 1056 West North Avenue; National Lead Company, 900 West 18th Street; Eagle-Picher Lead Company, 208 South LaSalle Street; and Raymond Lead Works, 735 South Washtenaw Avenue; all of Chicago, Illinois.

# Review of Conditions in the Metal Markets.

## General Situation in the Steel Industry. Report of Prices and Tendencies in Sheet Metals, Pig Iron, etc.

### *Traffic Difficulties Ease, Aid Non-Ferrous Markets.*

With improved railroad traffic conditions, buyers in the non-ferrous lines in some districts were stimulated to renewed interest in raw material requirements. The zinc industry, which has suffered particularly by the embargoes, was the first to benefit, inquiries by galvanizers served by the Pennsylvania being a development of the week. Copper prices have held steady at the recent slightly lower levels. Lead has been steady, while both tin and zinc have advanced almost to the highest levels of the past two years. Straits tin has sold above 35 cents for both prompt delivery and future shipment.

### *Copper.*

Casting copper has held firm at 13.40 cents to 13.50 cents, refinery, with good foundry buying reported by producers. Electrolytics were held at 13.87½ cents to 14 cents, delivered in January.

Domestic buying is hesitant, with reports conflicting and bearish, one being that the whole market will shortly be down at 13.75 cents. However, fabricators are doing a good business, being booked three months ahead. Some large orders for rolled and drawn products recently have been placed covering shipments well into 1923.

Consumers have been buying very little of late and stocks are getting low. It would seem that with their reentry into the market prices will again advance, and it appears to be undisputed that some of these buyers will avail themselves of the present prices and not await the higher ones which all experience shows is inevitable.

Export sales have improved lately, while London prices have stiffened, following their recent sharp reaction.

### *Zinc.*

The revival in demand of the past few days has again jumped into a shortage of zinc, and spelter climbed 20 points over the week end, with quotations of 7.05 cents to 7.10 cents, St. Louis. High grade zinc has been advanced by one leading maker to 8 cents, and is not obtainable under 7.75 cents delivered. Sheet zinc prices are irregular but with a tendency toward advances. One mill is quoting 8.75 cents, f. o. b. mill; another 9 cents, while a third has withdrawn prices and is quoting only on specifications. Business in rolled zinc has been active and the mills are sold from one to three months ahead at their present rate, curtailed by car and labor shortage.

### *Lead.*

The lead market continued firm and unchanged at from 6.35 cents, to 6.40 cents, East St. Louis, and 6.75 to 6.85 cents, New York, for prompt and November deliveries. The leading interest is quoting the lower range of this limit and the independents the higher. The market continues extremely strong.

### *Tin.*

Renewed bull pressure in the tin market saw the reaction inaugurated late last week give way to a new rise which carried spot Straits to 35.50 cents a pound, nearly a cent above the previous highs.

Consumers here have bought actively on the rise, although the New York market has much of the time been below the import cost, due to profit taking. The London market has advanced about fifteen pounds in the past month, due, it is believed to speculative buying by Dutch and British traders. Chinese tin has been offered at about 1 cent under Straits.

Sellers are holding closely what stocks they have, and the premium

of one-eighth cent that spots have commanded has been doubled.

So far this month more than 5,500 tons of tin has been landed here and 7,810 tons are on the seas.

### *Solder.*

Chicago warehouses quoted solder prices as follows: Warranted, 50-50, per 100 pounds, \$24.25; Commercial, 45-55, per 100 pounds, \$22.75; and Plumbers', per 100 pounds, \$21.50.

### *Bolts and Nuts.*

Improved deliveries were reported in the bolt, nut and rivet field. While a number of machines are inactive in the Pittsburgh district, there was reported a renewed demand from coal mining operators. Other consuming lines have come into the market for fair sized lots, although jobbers have not figured largely in the buying since the first of the month.

Structural rivets are quoted all the way from 3.00 cents to 3.25 cents, and boiler rivets from 3.10 cents to 3.35 cents, Pittsburgh base, although business at the higher figures is slack.

In the Chicago district the optimistic situation continues, with excellent order booking for fourth quarter delivery and a satisfactory volume of current buying for immediate needs, assuring manufacturers of good business throughout the remainder of the year.

Cleveland makers are satisfied with the amount of business being placed. One large manufacturer reports October business slightly in advance of his September output, although a decrease had been anticipated.

### *Nails and Wire.*

Wire and nails deliveries now form an important factor in the Chicago market, as jobbers are pressing for larger shipments. This indicates that stocks are depleted,



and that there is a real demand from consumers. It is brought home that users can obtain materials only as fast as the mills turn them out. Pending the filling of orders, inquiries for new business are light. Production is about 50 per cent. of capacity, with no increase in sight. Prices remain unchanged at 2.45 cents, Pittsburgh, for wire and 2.70 cents, Pittsburgh, for nails. Pittsburgh shipments are largely in open cars, because of the car shortage. Manufacturers have a diversified demand, sufficient to carry them through the year and they are not worrying about future business. Eastern manufacturers, in instances, are falling behind on deliveries because of traffic conditions.

#### *Tin Plate.*

With production costs advancing out of proportion to the \$4.75 per base box, Pittsburgh, selling price, tin plate producers are content to fulfill contracts and decline offered business. Occasionally new orders are accepted when they fit in with present rollings, but mill operations largely are maintained on the specifications being furnished regularly on old orders. But, all in all, tin plate is not doing badly for this time, the dullest season of the year, when general conditions are considered. There is a very fair operation of the mills—nearly 60 per cent—when 75 per cent all-year-round production would produce a record output. In many quarters there has been an expectation that tin plate would be advanced to \$5.00 or \$5.25, for the first half of the year, which may be responsible for recent inquiries.

#### *Sheets.*

Both Chicago sheet mills are sold up for the current year, and have not yet opened their books for the next. Consumers not receiving sufficient shipments are forced to look to Eastern producers, and material for prompt delivery is at a \$5 premium. The present nominal schedule is 2.50 cents for blue annealed, 3.35 cents for black and 4.35 cents, Pittsburgh, for galvanized.

Pittsburgh reports presage an

early announcement of a rise in prices by the leading interest, to be followed by the independents. Specifications on contracts are heavy and new business offered is large and for practically all grades of sheets. Shortage of steel and labor and inadequacy of transportation are factors. Various expedients have been resorted to to bring about increased steel supplies and to permit of better delivery service, resulting in increased operating expense which must be borne by the con-

sumer. While the American Sheet and Tin Plate company's prices, of 2.50 cents, 3.35 cents, 4.35 cents and 4.70 cents, Pittsburgh base, respectively, for blue annealed, black, galvanized and full finished automobile sheets are nominal, they have been met by the independents in a few instances. The actual market is about 15 cents higher, while prices as high as 2.85 cents, 3.85 cents, 4.85 cents and 5.00 cents, respectively, have been quoted and received by independents in instances.

## *Falling Coke Prices and Improved Traffic Conditions Lower Iron and Steel Market*

*Chicago District Holds Its Own With Northern Foundry at \$31 as Eastern Markets Slump.*

THE tumble in coke prices, together with some relief in the transportation congestion, were the governing factors in the week's iron and steel market. Mahoning Valley tonnage showed a gain, reflecting a slight easing up in the traffic situation, but conditions were little changed in the Pittsburgh and Chicago districts. But with coke prices off \$5 from their high levels of late September and early October, the readjustment of iron and steel prices was inevitable and virtually all lines showed reductions.

With prospects of further decreased prices, future inquiries in the northern market were light, but spot demand for pig iron was in good volume at \$31. Some melters are buying more heavily as their casting sales increase and a decided change in this direction is noted. Malleable iron is in especial demand as deliveries are slow from two stacks held back by want of fuel.

The Pittsburgh pig iron market is reported more clearly defined than at any time during the month. While one or two cases are noted where a special figure has been named upon basis, due to certain circumstances, \$30 valley is considered fairly representative. Two or three valley producers have quoted that price, and the scrap interest

which has a large tonnage for sale is understood to have fixed that figure. In bessemer several sales are reported involving an aggregate of between 500 and 1,000 tons at \$33 valley, which remains the quotable market.

Birmingham furnace interests insist that little of their probable output for the year remains unsold, yet pig iron quotations show weakness. Sales for No. 2 foundry iron were made at \$27. For spot iron sellers were demanding \$30. The surplus stock of iron in yards in Alabama will show further increase at the end of the month as the car supply has not improved as expected. It is now believed books for 1923 delivery will be opened in a few days, inquiries being numerous. The supply is increasing.

A Pittsburgh malleable foundry has closed on 2,000 tons of malleable iron at \$32, Johnstown, Pennsylvania. Valley producers continue to quote \$31 to \$32 with the same rate to Pittsburgh, meeting the Johnstown competition. No. 2 foundry iron (1.75 to 2.75 silicon) has been sold at \$31 and \$32 valley, which is \$1 to \$2 below the market of a week or so ago. Low phosphorus, copper-free iron continues to be bought in small lots, 50 to 100 tons, \$37 to \$38 valley.

# Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

## METALS

### PIG IRON.

Chicago Foundry..	\$31 00 to 32 00
Southern Fdy. No. 2	33 01 to 34 01
Lake Sup. Char-coal	34.15
Malleable	31 00 to 32 00

### FIRST QUALITY BRIGHT TIN PLATES.

	Per Box
IC 14x20 112 sheets	\$10 00
IX 14x20	11 25
EXX 14x20	12 40
EXXX 14x20	13 90
XXXX 14x20	15 25
IC 20x28	20 00
IX 20x28	22 50
EXX 20x28	25 20
EXXX 20x28	27 30
XXXX 20x28	30 50

### COKE PLATES.

Cokes, 180 lbs...	20x28 \$11 80
Cokes, 200 lbs...	20x28 12 00
Cokes, 214 lbs...IC	20x28 12 25
Cokes, 270 lbs...IX	20x28 14 10

### BLUE ANNEALED SHEETS.

Base	per 100 lbs. \$4 00
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### ONE PASS COLD ROLLED BLACK.

No. 18-20	per 100 lbs. \$4.65
No. 22-24	per 100 lbs. 4.70
No. 26	per 100 lbs. 4.75
No. 27	per 100 lbs. 4.80
No. 28	per 100 lbs. 4.85
No. 29	per 100 lbs. 4.95

### GALVANIZED.

No. 18	per 100 lbs. \$5.10
No. 18-20	per 100 lbs. 5.25
No. 22-24	per 100 lbs. 5.40
No. 26	per 100 lbs. 5.55
No. 27	per 100 lbs. 5.70
No. 28	per 100 lbs. 5.85
No. 30	per 100 lbs. 6.35

### BAR SOLDER.

Warranted.	
50-50	per 100 lbs. \$24 25
Commercial.	
45-55	per 100 lbs. 22 75
Plumbers	per 100 lbs. 21 50

### ZINC.

In Slabs	8 00
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### SHEET ZINC.

Cask lots, stock	10 1/2 c
Less than cask lots	10 1/2 c

### COPPER.

Copper Sheets, base	21 1/2 c
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### LEAD.

American Pig	7 50
Bar	8 25
Sheet.	
Full coils	per 100 lbs. 9 80
Cut coils	per 100 lbs. 10 05

### TIN.

Pig Tin	per lb. 39c
Bar Tin	41 1/2 c

## HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

### ADZES.

Coopers'.	
Barton's	Net
White's	Net

### AMMUNITION.

Shells, Loaded, Peters.	
Loaded with Black Powder 18%	
Loaded with Smokeless Powder	18%
Winchester.	
Smokeless Repeater	20 & 4%
Grade	
Smokeless Leader	20 & 4%
Grade	
Black Powder	20 & 4%
U. M. C.	
Nitro Club	20 & 4%
Arrow	20 & 4%
New Club	20 & 4%
Gun Wads—per 1000.	
Winchester 7-8 gauge 10 1/2 1/4 %	
9-10 gauge 10 1/2 1/4 %	
11-35 gauge 10 1/2 1/4 %	

### ASBESTOS.

Paper up to 1/16	6c per lb.
Rollboard	6 1/2 c per lb.
Millboard 3/32 to 1/4	6c per lb.
Corrugated Paper (360 sq. ft. to roll)	\$5.00 per roll

### AUGERS.

Boring Machine	40 & 10%
Carpenter's Nut	50%
Hollow.	
Bonney's	per doz. \$30 00
Post Hole.	
Iwan's Post Hole and Well	30 and 5%
Vaughan's, 4 to 9 in., with out handles per doz.	\$14 00

### AWLS.

Brad.	
No. 3 Handled	per doz. \$0 65
No. 1050 Handled	1 40
Patent asstd'd, 1 to 4	35
Harness.	
Common	per doz. \$1 05
Patent	1 00
Peg.	
Shouldered	1 80
Patented	75
Scratch.	
No. 18, Socket	
Handled	per doz. \$2 50
No. 344 Goodell.	
Pratt, list less	35-40%
No. 7 Stanley	per doz. \$2 25

### AXES.

First Quality, Single	
Bitted (unhandled), 3 to 4 lb., per doz.	\$13 50
Good Quality, Single	
Bitted, same weight, per doz.	12 50

### BALANCES, SPRING.

Universal.	
Sight Spring	List less 25%
Straight	List less 25%

### BARS, WRECKING.

V. & B. No. 12	\$0 24
V. & B. No. 24	0 43
V. & B. No. 32	0 57
V. & B. No. 30	0 43
V. & B. No. 320	0 63

### BEVEL, TEE.

Stanley's Rosewood handle, new list	Nets
Stanley Iron handle	Nets

### BINDING CLOTH.

Zinc	55%
Brass	40%
Brass, plated	60%

### BITS.

Auger.	
Jennings Pattern	Net
Ford Car	25% off
Ford's Ship	25% off
Irwin	25%
Russell Jennings	less 10%
Clark's Expansive	33 1/2 %
Center	10%
Countersink.	
American Snailhead	1 75
" Rose	3 00
" Flat	1 40
Dowel.	
Russell Jennings	plus 20%
Gimlet.	
Standard Double Cut Gross	\$5 40
Nail Metal Single	
Cut	Gross \$4 00—\$5 00

Reamer.	
Standard Square	per doz. \$3 50
American Octagon	2 50
Screw Driver.	
No. 1 Common	Each 15c
No. 28 Stanley	Each 70c

### BLADES, SAW.

Wood.	
Atkins 30-in.	38 50 39 45 35 40
No.	38 50 39 45 35 40
Diston 30-in.	38 50 39 45 35 40
No.	38 50 39 45 35 40

### BLOCKS.

Wooden	20%
Patent	20%

### BLOW TORCHES (See Firepots).

	Per Doz.
Stove.	
26x28, wood lined	\$14 45
28x28, " "	16 95
30x28, " "	19 00
26x28, paper lined	8 15
28x28, " "	8 10
30x28, " "	10 80

Wash.	
No. 760, Banner Globe	
(single)	per doz. \$5 25
No. 652, Banner Globe	
(single)	per doz. 475
No. 801, Brass King	per doz. 3 25
No. 860, Single—Plain	
Pump	6 25

### BOLTS.

Carriage, Machine, etc.	
Carriage, cut thread, 1/4 x 6 and sizes smaller and shorter	50%
Carriage sizes, larger and longer than 1/4 x 6	40-5%
Machine, 1/4 x 4 and sizes smaller and shorter	50-10%
Machine, sizes larger and longer than 1/4 x 4	50-5%
Stove	75-10%

Mortise, Door.	
Gem, iron	5%
Gem, bronze plated	5%

Barrel.	
Cast	Net
Wrought	"
Wrought, bronzed	"

Flush.	
Wrought	Net

Spring.	
Wrought	"
Wrought, heavy	"

Square.	
Wrought	"

### BOXES.

Mail, No. 2	4 10
Per doz.	\$18 00 \$23 00 \$29 00
Cast Iron.	
Per doz.	\$9 50

Mitre.	
Stanley's	Net Prices
Stearns, No. 2	per doz. \$48 00

### BRACES, RATCHET.

Goodell-Pratt No. 408	\$4 60
" No. 410	4 80
" No. 412	5 00
V. & B. No. 444 8 in.	4 65
V. & B. No. 338 8 in.	4 20
V. & B. No. 222 8 in.	4 00
V. & B. No. 111 8 in.	3 50
V. & B. No. 11 8 in.	3 05

### BURRS, RIVETING.

Copper Burrs only	40-5%
Tinners' Iron Burrs only	Net

### BUTTS.

Steel, antique copper or dull brass finish—case lots—3 1/4 x 3 1/4	per dozen pairs \$2 75
4x4	2 80

Heavy Bevel steel inside sets, case lots—	
"	per dozen sets 7 50
Steel bit keyed front door sets, each	1 80
Wrought brass bit keyed front door sets, each	2 25
Cylinder front door sets, each	7 00

### CALIPERS.

Double	Net
Inside and Outside	"
Wing	"

### CARRIERS.

Hay.	
Diamond, Regular	each, nets
Diamond, Sling	
Standard—Ball Bearing	50 & 10%
Bed	40%
Common Plate.	
Brass Wheel	15%
Iron and porcelain wheels, new list	50%
Philadelphia Plate, new list	50%
Martin's	40%

CATCHERS, GRASS.	
No. 1408	per doz. \$12 25
No. 1458	14 01

CEMENT, FURNACE.	
American Seal, 5 lb. cans, net	\$0 45
" 10 lb. cans	50
" 25 lb. cans	1 37
Asbestos, 5 lb. cans	45
Pecora, 5 lb. cans	45
" 10 lb. cans	50
" 25 lb. cans	1 37

### CHAINS.

Breast Chains.	
With Slide	per pair, \$5 40
Without Slide	5 00
Doublestack	5 25
With Covert Snaps	6 00
Picture Chains.	
Light brass, 3 ft., per doz.	1 25
Heavy brass, 3 ft.	1 75
Steel Chain (Morton's)	
Steel, per 100 ft.	\$2 50
1	2 10
2	3 00
3	3 50

Champion Metal.	
OR	5 40
2R	5 00
1R	7 75
Champion Metal—Extra Heavy.	
1H	\$5 50
Cable Sash Chains.	
Steel	List Net Plus 15%

CHALK, CARPENTERS.	
Blue	per gro. \$2 00
Red	2 00
White	1 20
Common White School	0 20
Crayon	0 20

CHIMNEY TOPS.	
In bags	per bag \$1 80

CHECK, DOOR.	
Corbin	Net list
Russwin	Net list

CHISELS.	
Cold.	
V. & B. No. 25, 1/4 in., each	\$0 25
V. & B. No. 25, 1/2 in., each	41
Diamond Point.	
V. & B. No. 15, 1/4 in.	0 21
V. & B. No. 15, 1/2 in.	0 48
Firmer Bevelled.	
Round Nose.	
V. & B. No. 65, 1/4 in.	0 21
V. & B. No. 65, 1/2 in.	0 40
Socket Firmer.	

Cape.	
V. & B. No. 50, 1/4 in.	0 31
V. & B. No. 50, 1/2 in.	0 57

CHUCKS, DRILL.	
Goodell's, for Goodell's Screw Drivers	List less 35-40%
Yankee, for Yankee Screw Drivers	\$6 00

CHURNS.	
Gal.	5 7 10
Each	\$2 00 \$4 60 4 85
Belle, Barrell	65 & 7 1/2 %
Common Dash.	
Gal.	5 7
Per doz.	\$17 00 19 00

Adjustable.	
Martin's	30%
No. 63, Screw	20%
Cabinet.	
Screw	20%

Carpenters'.	
Steel Bar	List price plus 20%
Carriage Makers'.	
2 1/4-inch	per doz \$7 00
5 -	14 00
8 -	23 00
12 -	42 00

Hose.	
Sherman's brass, 1/4-inch	per doz. \$0 45
Double, brass, 1/4-inch, per doz.	1 20

Saw Filers.	
Wentworth's No. 1, \$12.50; No. 2, \$12.25; No. 3, \$12.15.	

CLAWS, TACK.	
Wood hdl. No. 10, per doz.	\$1 15
Forged steel, wood hdl.	2 15
Solid steel	3 25
Giant	50

CLIPSERS.	
Belt (Carolus).	
No. 9	\$2 50
No. 1	3 25
No. 2	4 25

CLIPS.	
Acme, with tail pieces, per doz.	\$1 25
Non Rivet tail pieces, per doz.	25
Non Rivet Clips	30
Hame	50c



COLLARS, STOVE PIPE.			
Lacquered.	5	6	7
Inches.....	65c	75c	\$4 00
Fancy pattern,			
per doz.....	65c	75c	\$4 00
COMPASSES.			
Carpenters.....	15%		
COPPER—Soldering.			
Pointed Roofing.			
1 lb. and heavier.....	per lb.	40c	
2 1/2 lb.....		45c	
3 lb.....		48c	
4 lb.....		55c	
1 lb.....		60c	
CORD.			
Picture.			
White Wire.....	60	& 5%	
Snash.			
Spot No. 7.....	per lb.	65c	
Common, No. 7.....		45c	
COTTERS, SPRING.			
All sizes.....		87 1/2%	
COUPLINGS, ROSE			
Brass.....	per doz.	\$3 25	
OUT-OFFS			
Standard gauge.....		35%	
26 gauge.....		20%	
Kuehn's Korrekt Kutoffs:			
Galv., plain, round or cor. rd.			
Standard gauge.....		40%	
26 gauge.....		10%	
CUTTERS.			
Glass.			
Red Devil.....		Net	
Meat.			
Enterprise—Nos. 5	10	12	
Each.....	\$2 50	\$4 25	\$3 75
Nos. 32	32		
".....	\$6 50	\$5 50	
Pipe.			
Saunders, Nos. 1	2	3	
Each.....	\$1 85	2 75	6 75
Slaw and Kraut.....	Per doz.		
4-knife Kraut.....	\$20 00	55 00	
3-knife Kraut,			
8x27 in.....	18 00	18 00	
1-knife Slaw.....		3 50	
2-knife Slaw.....		3 00	
Washer.....		11 00	
DAMPERS, STOVE PIPE.			
Diamond.			
6-inch.....	per doz.	\$1 50	
DIGGERS.			
Post Hole.			
Iwan's Split Handle			
(Eureka)			
4-ft. Handle.....	per doz.	15 00	
7-ft. Handle.....	per doz.	20 00	
Iwan's Hercules pattern,			
per doz.....		18 00	
Dividers, Wing.....		25%	
DRILLS.			
Bench.			
Blacksmiths' Twist (New			
List)			40%
Best.			
Millers Falls No. 12, per			
doz.....		\$45 50	
Millers Falls No. 112, per			
doz.....		\$2 00	
Hand.			
Goodell's Automatic.			
No. 01.....	each	\$1 60	
No. 03.....		2 00	
Goodell-Pratt No. 4 1/2		3 00	
Goodell-Pratt No. 379.		4 00	
Reelproteating.			
Goodell's.....		2 20	
DRIVERS, SCREW.			
Standard.....		Nets	
EAVES TROUGH.			
79% of Standard List.			
Milcor.			
Galv. Crimpedged, graded.....		75%	
ELBOWS—Conductor Pipe.			
Galvanized Steel, Tin and Terne			
Plain Round or Round Corrugated			
2 to 6 inch, Std. gauge.....		65%	
2 to 6 inch, 26 gauge.....		45%	
2 to 6 inch, 24 gauge.....		30%	
Milcor.			
Galv., plain or corrugated, round			
flat.			
Crimp. Std. gauge.....		65%	
26 Gauge Std. gauge.....		45%	
24 Gauge Std. gauge.....		15%	
Square Corrugated.			
Standard gauge.....		50%	
26 Gauge.....		30%	
Milcor.....			
Standard Gauge.....		50%	
26 Gauge.....		35%	
Portico Elbows.			
Standard Gauge Conductor Pipe,			
plain or corrugated.			
Not Nested.....		70&5%	
Nested solid.....		70&5%	
HOES.			
Garden.....		Net	
ELBOWS—Stove Pipe.			
1-piece Corrugated, Uniform			
Doz.			
5-inch.....		\$1 38	
6-inch.....		1 54	
7-inch.....		1 98	
Special Corrugated.			
Doz.			
6-inch.....		\$1 27	
7-inch.....		1 76	
Uniform, Collar Adjustable			
Doz.			
5-inch.....		\$1 76	
6-inch.....		1 98	
7-inch.....		2 48	

FACES, WOOD—50% off list.	
FENCING.	
Lawn fence, single space, 36-inch.....	\$ 9 13
Lawn fence, single space, 42-inch.....	10 20
Lawn fence, double space, 32-inch.....	12 50
Lawn fence, double space, 42-inch.....	13 75
Field fence, 26-inch, No. 10 top and bottom 12 filling	26 50
Same, 6 filling.....	33 82
Field fence, 22-inch, No. 10 top and bottom 12 filling	30 24
Same, 6 filling.....	39 41
FILES AND RASPS.	
Heller's (American).....	55-5%
American.....	65-5%
Arcade.....	60 & 10%
Black Diamond.....	50-5%
Eagle.....	60-10%
Great Western.....	60 & 10%
Kearney & Foot.....	60 & 10%
McClellan.....	60 & 10%
Nicholson.....	50-10%
Simonds.....	60%
J. Barton Smith.....	50-10-5%
X F.....	Net List
FIRE POTS.	
Clayton & Lambert's—	
East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....	65%
West of above boundary line.....	52%
Turner Brass Works—	Ea.
No. 43 Kerosene-Gasoline Master Torch, 1 qt.....	\$5 40
No. 48 Kerosene-Gasoline Master Torch, 1 qt.....	6 75
No. 95 Double Jet Torch, Gasoline, 1 qt.....	6 98
No. 20 Kerosene-Gasoline Torch, 1 qt. (new line).	6 48
No. 33 Single Jet Gasoline Torch, 1 qt.....	6 98
No. 53 Pibra. Furn. Galv. Iron Tank with Bulb, 7 pts.....	6 75
No. 63 Pibra. Furn. Galv. Iron Tank with Pump, 7 pts.....	7 47
No. 56 Pibra. Furn. Straight Side Steel Tank with Bulb, 7 pts.....	8 82
No. 66 Pibra. Furn. Straight Side Steel Tank, with Pump, 7 pts.....	9 54
Otto Bernz Co.—	
No. 1 Furn. Gasoline with large shield, 1 gal....	\$ 6 75
No. 10 Brazier, Kerosene or Gasoline, 10 gals.....	15 12
No. 5 Torch, Gasoline or Kerosene, 1 pt.....	7 92
No. 82 Torch, Gasoline, 1 quart.....	5 40
No. 86 Torch, Gasoline, 1 pt.....	4 05
GALVANIZED WARE	
Pails (Competition), 8-qt.....	Per doz. 2 00
10-qt.....	2 15
12-qt.....	2 40
14-qt.....	2 65
Wash tubs, No. 1.....	6 25
No. 2.....	7 25
No. 3.....	8 25
GARAGE DOOR HARDWARE	
Stanley.....	All net
GAUGES.	
Marking, Mortise, etc.....	Nets
Wire.	
Disston's.....	25%
GIMLETS.	
Discount.....	65% and 10%
GLASS.	
Single Strength, A and B, all sizes.....	85%
Double Strength, A and B, all sizes.....	85%
GLUE.	
Bulk.	
B Amber.....	per lb. 85c
A white.....	40c
H. S. Amber.....	32c
Liquid.	
Army & Navy.....	40%
Le Page's—	
List "A".....	37 1/2%
List "B".....	35 %
List "C".....	25 %
GREASE, AXLE.	
Wood Boxes.	
Fraser's.....	per gro. \$12 00
Hub Lightening.....	7 50
Wood Pails.	
Fraser's, 15 lb. \$1.00; 25 lb. \$1.50 each.	
Hub Lightening, 15 lb. 90c; 25 lb. \$1.21 each.	
HAFTS, AWL.	
Brad.	
Common.....	per doz. \$0 35
Peg.	
Patent, plain top.....	80
Patent, leather top.....	80
Sewing.....	
Common.....	24
Patent.....	55

HAMMERS, HANDLED.	
Each, net	
Blacksmiths', Hand, No. 0	
26-oz.....	\$1 00
Engineers' No. 1, 26-oz.....	\$1 00
Farriers', No. 7, 7-oz.....	93
Machinists', No. 1, 7-oz.....	78
Nail.	
Vanadium, No. 41, 20-oz.....	1 45
Vanadium No. 41 1/2, 16-oz.....	1 45
each.....	
V. & B., No. 11 1/2, 16-oz.....	1 04
each.....	
Garden City, No. 11 1/2, 16	
oz., each.....	37
Tinner's Riveting, No. 1, 8	
oz., each.....	82
Shoe, Steel, No. 1, 12 oz.....	65
each.....	
Tack.	
Magnetic.	
No. 5, each.....	72
HAMMERS, HEAVY.	
Farriers'.....	20%
Mason's.	
Single and Double Face.....	50%
HANDLES.	
Agricultural Tool.	
4 1/2-inch, plain.....	per doz. \$3 50
Auger.....	per doz. \$0 75
Common Assorted, per doz.....	\$0 75
Pratt's Adjustable, Nos.	
1 & 2, per doz.....	6 00
Ives' Adjustable.....	per set 1 35
Axe.	
Hickory, No. 1.....	per doz. 3 00
Hickory, No. 2.....	3 00
1st quality, second growth.....	6 00
Special white, 2nd growth.....	4 50
Chisel.	
Hickory, Tanged, Firmer	
Assorted.....	per doz. 55c
Hickory, Socket Firmer	
Assorted.....	per doz. 70c
Coal Pick.....	40%
Drifting Pick.....	40%
File, assorted.....	per doz. 30c
Hammer and Hatchet.	
No. 1, per doz.....	40 80
Second growth hickory, per	
doz.....	1 20
Hay and Manure Fork, Han-	
dles, Strap and Ferrule.....	per doz. \$7 00
Screw Driver.	
Assorted.....	each 5c
Shovel and Spade.....	Net
HANGERS.	
Door.	
Matchless.....	Net
Reliable.....	Net
Richards.....	25%
Garage Door.	
(See Garage Door Hdw.)	
Conductor Pipe.	
Milcor Perfection Wire.....	25%
Eaves Trough.	
Steel hangers.....	30%
Triple twist wire.....	10%
Milcor Eclipse Wire.....	15%
Milcor Triplex Wire.....	10%
Milcor Milwaukee Extension.....	10%
Milcor Steel (galv. after form-	
ing) List plus.....	12 1/2%
Milcor Selflock E. T. Wire, List	
plus.....	40%
HASPS.	
Hinge, Wrought, with staples, Net	
HATCHETS.	
Per doz.	
Size No. 2 extra quality	
broad.....	\$16 00
Competitive Grade.....	12 00
No. 2 Warranted Shingling.....	12 00
Competitive Forged.....	8 00
HAY RACK BRACKETS	
Wenzelman's No. 1	
.....	per doz. sets \$18 00
Wenzelman's No. 2	
.....	per doz. sets 19 20
HINGES.	
Blind.	
Clark's Gravity.....	per set 45c
No. 1.....	88c
No. 2.....	
Gate.	
Clarks.....	1 2 3
Hgs. & Litch, ea. 85c 1 10 3 40	
Hinges only—	
Upper.....	\$1 25
Lower.....	1 55
Latches only—	
No. 2.....	each 28c
No. 2.....	28c
Screen Door.	
1751—3x3.....	doz. \$2 00
1752—2 1/2x3 1/2.....	1 95
Spring.	
Chicago.....	Add 10% to list
Gem.....	25%
Matchless.....	40%
New Idea.....	per gross \$5 90
Wrought Iron.	
Per 100 pairs with screws:	
Light Strap Hinges, No. 3.....	\$12 00
Heavy Strap Hinges, No. 4.....	15 75
Light T Hinges.....	No. 3 12 10
Heavy T Hinges.....	No. 4 20 00
Extra Heavy T Hinges,	
.....	No. 4 21 50
Screw Hook and Strap.	
6 to 12 in.....	per 100 lbs. \$7 75
14 to 20 in.....	" 7 50
22 to 36 in.....	" 7 35
Screw Hook and Eye.	
1/4 in.....	per doz. pair \$2 00
1/2 in.....	" 2 50
3/4 in.....	" 5 00

HOOKS.

Awning, No. 60.....

Net

Belt.

Brown's.....

70&5%

Jones'.....

65&5%

Box.

No. ....

3

10

12

Each .....

\$0 29

0 77

0 88

Bush.

Common Axe Handle,

per doz.....

\$20 00

Chain.

Inch.....

5/16

7/16

1 1/2

Pr. 100 \$7 60-8 10 9 75 11 50 13 00

Clothes Line.

Japanned.....

per doz.

35c-1 00

Galvanized.....

"

55c-3 25

Conductor.

Conductor hooks .....

20-10%

Milcor .....

"Direct Drive" Wrought

Iron for wood or brick.....

15%

Corr.

Common, riveted, red, per ds. Net

Little Giant.....

"

Grass.

Common Nos. 1

3

5

7

Per doz.....

\$4 25

3 25

3 40

3 50

Hammock.

With plate.....

per doz.

\$1 00

With screw.....

85

Picture.....

50%&50%&10%

Potato and Manure.....

Nets

HOSE.

Per Ft.

1/2-inch molded reel.....

13 1/2c

1/2-inch 3 ply duck.....

13 1/2c

1/2-inch 4 ply duck.....

13 1/2c

1/2-inch 5 ply multiple.....

10 1/2c

IRONS.

Sad.

Charcoal .....

per doz.

\$11 00

Common, polished, per

100 lbs.....

7 75

No. 70 Asbestos.....

\$1 50 net

No. 100.....

1 75 net

Common, nickel plated..

3 25

Mrs. Pott's.

No. 50 J. Enterprise, per set Nets

No. 55 J.,

"

"

No. 50 T,

"

"

No. 55 T,

"

"

JACKS.

Wagon.

Richard's No. 1.....

per doz.

\$15 50

Oliver.

Each .....

\$0 60

\$0 80

Nos.....

0

00

Standard.

Each .....

\$0 60

\$1 00

Nos.....

1

2

Big Lift .....

40%

Tiger .....

40%

KETTLES.

Brass .....

15%

Cauldron .....

40&5%

Copper .....

per lb.

37

Maalin.....

40&25%

Sugar .....

50%

KNIVES.

Beet Topping.

Clyde, 5-In. Scimiter Blade,

doz. ....

25%

California .....

25%

Butcher.

Beechwood Handles, 6-inch

blade .....

25%

Beechwood Handles, 7-inch

blade .....

25%

Beechwood Handles, 3-inch

blade .....

25%

Cooper's Hoop.....

25%

Drawing.

Standard .....

25%

Adjustable .....

25%

Barton's Carpenters' .....

25%

Hay.

Iwan's Solid Socket.....

25%

Heath's.....

25%

Iwan's Sickle Edge.....

25%

Iwan's Imp'd Serrated.....

25%

Hedge.

Challenge .....

25%

Diaston's No. 1.....

25%

Putty.

Common .....

25%

Lander's .....

25%

Scrap.

Beech Handle .....

25%

Lander's .....

25%

KNOBS.

Door.

Mineral .....

per doz.

\$1 00

Porcelain .....

"

1 00

Jet .....

"

1 00

LADDERS.

Step.

Common, per ft.....

20c

Common, with Shelf, add 10c

IXL .....

30c

Challenge, 6 to 9 ft.....

50c

10 to 16 ft.....

60c

LANTERNS.

Per doz.

Monarch tin, hot blast.....

3

25

Diets No. 3, cold blast.....

12

00

Best tubular .....

8

00

Competition lanterns No. 0

tubular .....

6

00

LEATHER, LACE.

Rawhide 1/4-inch .....

100 ft.

\$3 00

1/4-inch ....

2 00

LEATHERS, PUMP.

Valve and Plunger.....

Net

LEVELS.	
Dixton, No. 22 Asst.....	\$22 05
" No. 12, 20 in. each	1 33
" No. 22, 24 in. each	2 40
" Shafting, 6 in. ....	19 30
" 6 in. gr. glass	24 20
" No. 1 Asst.....	5 75
" No. 9 Asst.....	12 40
" 24-30 in. ....each	1 02
" 30-36 in. ....each	1 00

LIFTERS.	
Steve Cover.....	per gro. \$6 00
Coppered.....	4 75
Transom.....	
Payson's.....	55%

LINES.	
Jute.....	per lb. 25c
Sisal.....	35c
Cotton.....	25c
Braided Cotton.....	52c

LINING, STOVE.	
Bricks.....	per crate 42c

LOCKS.	
Barn Door.....	
No. 60 Stearns.....	per doz. \$12 00
No. 50.....	24 00

MACHINES.	
Riveting.....	
Stearns No. 1.....	per doz. \$16 00
Tenoning.....	
No. 50 Peace's Spoke, each	\$16 00

MALLETS.	
Carpenter's.....	
Fibre Head, No. 2 per doz.	\$16 50
" No. 3.....	19 50
" No. 4.....	28 50
Round Hickory.....	per doz. \$3 00—5 00
Timbers.....	per doz. \$2 25

MATS.	
National Rigid.....	5&10&5%
Acme Steel Flexible.....	50%
MEASURES.	
Galvanized, doz.....	Nets
Japanned, doz.....	Nets

MITRES.	
Galvanized steel mitres, and caps, end pieces, outlets.....	30%
Milcor.....	
Galv. one piece stamped.....	40%

MOPS.	
Cotton, Star (Cut Ends).....	
Pounds 12' 15' 18' 24' 3-oz.	
Per doz. \$4 00 4 35 5 50 7 00	
Enterprise.....	10&5%
Parker.....	50&5%

NAILS.	
Out Steel.....	\$4 60
Out Iron.....	4 60
Wire.....	
Common.....	3 45
Cement Coated.....	
Small Lots.....	2 80

HORSESHOE.	
Ausable.....	55&5%
Capwell.....	15%
Perfect.....	55&5%
Putnam.....	30&5%
Star.....	30&5%

Picture.	
Brass Heads.....	25%
Brads.....	70%
Furniture.....	List plus 15%

NETTING, POULTRY.	
Galvanized before weaving.....	50%
Galvanized after weaving.....	40%

NIPPERS.	
End Cutting.....	
Berg's (Swedish) In. 5.....	6
Per dozen.....	\$12 60 15 20
End and Diagonal Cutting.....	
Berg's (Swedish) In. 5.....	6
Per dozen.....	\$10 05 13 00

Hoof.	
Heller's.....	40&10%
V. & B., No. 53, each.....	\$2 25

NOZZLES.	
Zero.....	
Magic.....	per doz. \$9 50
Diamond.....	5 75

OILERS.	
Chase Pattern.....	
Brass and Copper.....	10%
Zinc.....	30%
Railroad.....	
Coppered.....	32&4%
Steel.....	
Copper Plated.....	50-10-5%

OPENERS.	
Can.....	
Delmonico.....	per doz. \$1 30
Never Slip.....	85
Crute.....	
V. & B.....	per doz. \$7 25-11 00

FAILS.	
14-qt. without gauge.....	per doz. \$9 50
18-qt. without gauge.....	per doz. 11 00
20-qt. without gauge.....	per doz. 11 75

Sap.	
10-qt. IC Tin.....	per doz. \$4 00
12.....	5 50

Stack.	
Galv. qts. 14 16 18 20	
Per doz. \$9 75 10 75 12 75 14 50	

Water.	
Galvanized qts. 10 12 14	
Per doz.....	\$5 75 6 50 7 35
Wood.	
Cable, 2-Hoop.....	per doz. Nets
Cable, 3-Hoop.....	" Nets
Cedar, 3-Hoop, brass.....	" Nets

FANS.	
Dripping.....	Net
Fry.....	
Common.....	Nets
Acme.....	
Roasting.....	
Paxton.....	
No.....	1 2 3 4
Per doz.....	Nets
Neverburn.....	
Savory, No. 200.....	per doz. \$8 40

PAPER.	
Roading.....	Per square
Mayor, 1-ply.....	\$1 23
" 2-ply.....	2 24
" 3-ply.....	2 65
Red Rosin.....	per ton \$11 45
Sand and Emery.....	
No. 1 per ream, best grade	\$5 40
No. 1, per ream, cheaper grade	4 35

Potato.	
Goodell's Saratoga, 10 1/2 in. doz.	\$6 50
Goodell's Saratoga, 5 in. doz.	5 50

PICKS.	
Adze Eye Ore.....	22 1/2%
Drifting and Poll Picks.....	22 1/2%
Plumba, Railroad.....	22 1/2%
Surface.....	22 1/2%

PINCERS.	
Carpenter's, cast steel, No.....	8 10 12
Each \$0 43 \$0 52 \$0 61 \$0 71	
Blacksmiths', No. 10.....	\$0 64
Heller's.....	List plus 10%

PINS.	
Clothes.....	
Common, per box of 5 gro.	\$0 95
Picket.....	
Fluted, 15-in.....	per doz. \$1 10
Fluted, 21-in.....	" 1 60
Spiral.....	" 1 90

PIPE.	
Conductor.....	
Plain Round and Round Corrugated.....	
29 Gauge.....	70&5%
28.....	70&5%
26.....	70&5%
24.....	70&5%

"Interlock" Galvanized.	
Crated and nested (all gauges).....	60-20%
Crated and not nested (all gauges).....	60-15%
Square Corrugated A and B and Octagon.....	
29 Gauge.....	65%
28.....	65%
26.....	65%
24.....	65%

"Interlock."	
Crated and nested (all gauges).....	60-20%
Prices for Galvanized Toncan Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application.	

Stove.	
26 gauge, 5 inch E. C. nested	15 40
26 gauge, 6 inch E. C. nested	16 50
26 gauge, 7 inch E. C. nested	18 70
28 gauge, 5 inch E. C. nested	13 20
28 gauge, 6 inch E. C. nested	14 30
28 gauge, 7 inch E. C. nested	16 50
30 gauge, 5 inch E. C. nested	11 00
30 gauge, 6 inch E. C. nested	12 10
30 gauge, 7 inch E. C. nested	14 30

T-Joint Made up.	
6-inch.....	per 100 28 50

Furnace Pipe.	
Double Wall Pipe and Fittings.....	40%
Single Wall Pipe, Round Pipe Fittings and Back Iron Pipe, Shoes, etc.....	40%
Milcor, galvanized.....	Net

PLANES.	
Stanley Iron Bench.....	Net

PLIERS.	
V. & B. No. 6.....	each \$0 61
" No. 7 Gas.....	0 55
" Double Duty 100.....	0 50
" Nut No. 2.....	0 60

Lineman's Side Cutting.	
Berg's (Swedish), In. 6 7 8	
Blk. Pol. Face, doz.....	\$10 70 20 00 23 35
Long Nose Side Cutting.....	
Berg's (Swedish) In. 5	15 20
Blk. Pol. Face, doz. \$12 35	16 30

Flat and Round Nose.	
Berg's (Swedish) Flat, In. 4 6 8	
Blk. Pol. Face, Doz.....	\$8 90 13 35 19 65
Berg's (Swedish) Round, In. 4 6 8	
Blk. Pol. Face Doz.....	\$11 15 16 30 22 35

POINTS, GLAZIERS.	
No. 1, 2 and 3.....	per doz. 75c

POINTERS, SPOKE.	
Stearns' No. 1.....	per doz. \$10 00
No. 2.....	12 00

POKERS, STOVE.	
Wrt Steel, str't or bent.....	
per doz. \$0 75	
Nickel Plated, coil han's.....	1 10

PRESSES, FRUIT AND JELLY.	
Enterprise Manufacturing Co.	35%

PRUNERS.	
Dixton's Pole.....	per doz. \$12 00
Water's Improved.....	60%

NAIL.	
Giant.....	per doz. \$14 50
Never-Slip.....	17 00

PULLEYS.	
Awning-Jay'd.....	10%
Clothes Line.....	10%

Hay Fork.	
Iron Wheel, 5-in.....	per doz. \$2 50
Wood Wheel, 5-in.....	2 85
Wood Wheel, 6-in., pass knot.....	3 00

Sash.	
Common.....	Net
Common-Sense, 2-in.....	Net
Empire Pattern, 2-in.....	Net
Ideal.....	Net
Steel.....	Net

PUMPS.	
Spray.....	
Midjet Junior.....	per doz. \$3 75
New Misty.....	5 00
Crescent.....	5 50

PUNCHES.	
Conductors.....	
No. 22.....	per doz. \$3 00
Machine.....	per lb. 25
Saddlers'.....	
Common.....	per doz. \$1 50 to \$5 00

Revolving Spring.	
Stearns, No. 10.....	per doz. \$3 00
" No. 40.....	16 00
" No. 80.....	19 00

Parker Metal Punch No.	
OX.....	each \$7 00
Whitney's Ball Bearing.....	
Prices on application	

APPLE.	
Goodell's.....	per doz. \$10 80
Turntable.....	11 40
White Mountain.....	8 40
Reading No. 78.....	11 40

PUTTY.	
Commercial Putty, 100-lb. kits.....	\$4 75

RAKES.	
Garden.....	Per doz.
Steel, Bow, 12-inch Teeth	\$8 50
Steel, Bow, 14-inch.....	9 35
Malleable Iron, 12-in.....	4 75
Malleable Iron, 14-in.....	5 00

Hay.	
Wood, 10 Teeth.....	\$4 00

Lawn.	
30 Teeth.....	per doz. 5 50

RAZORS—SAFETY.	
Gillette.....	per doz. \$45 00
Auto Strop.....	45 00
Gem.....	3 40
Gem (3 doz. lots).....	3 00
Ever Ready.....	3 40
Ever Ready (3 doz. lots).....	3 00

RAZORS—STRAIGHT.	
RAZOR STROPS.	
Star (Honing).....	50%

FLOOR REGISTERS AND BORDERS.	
Cast Iron.....	15%
Steel and Semi-Steel.....	30%
Baseboard.....	30%
Adjustable Ceiling Ventilators.....	30%
Register Faces—Cast and Steel Japanned, Bronzed and Plated, 4x6 to 1414.....	20%
Large Register Faces—Cast, 14x14 to 38x42.....	50%
Large Register Faces—Steel, 14x14 to 38x42.....	60%

RIDGE ROLL.	
Galvanized.....	70-25%
Wire.....	70-25-5%
Milcor.....	75%
Plain, crated.....	75-2 1/2%
Plain, bundled.....	75-2 1/2%

RINGS AND RINGERS.	
Copper.....	3 1/2-in. 2-in.
Per doz.....	\$3 40 12 65
Rea's Improved Self-Piercing copper.....	doz. \$4 40
Steel, per doz.....	1 50
Fruit Jar.....	
White.....	per lb. 20

RIVETS.	
Copper Belt.....	50% Discount
Coppered Iron.....	50%
Timbers.....	50%

Hame.....	
per lb. \$0 17	
Slotted Clinch per doz. \$0 00 @ 1 10	
Tubular.	
No. 1 and 2 assorted sizes, 50 in box.....	doz. 75c
No. 1 and 2 assorted sizes, 10 in box.....	doz. 1 40

ROPE.	
Cotton.....	
1/4, 5-16 in. Com. on reels, per lb.....	30c
1/4, 5-16 in. Com., in coils, per lb.....	30c

Sisal.	
1st Quality, base 14 1/2c to 15 1/2c	
No. 2.....	13c to 14c

Manilla.	
1st Quality standard brands.....	17 1/2c to 18 1/2c
No. 2.....	16c to 17 1/2c
Hardware Grade, per lb. 12 1/2c	

Pure Manilla.	
1st Quality, base, per lb.....	17 1/2c to 18 1/2c
Hardware Grade, per lb. 12 1/2c	

SAWS.	
Butchers'.....	
Atkins No. 2, 14-in.....	\$11 50
" No. 2, 18-in.....	13 00
" No. 7, 16-in.....	14 44
" No. 2, 22-in.....	14 43
" No. 7, 20-in.....	16 43
" No. 7, 24-in.....	18 38
" No. 7, 28-in.....	20 33

Compass.	
Atkins No. 2, 10-in.....	\$4 95
" No. 10, 10-in.....	5 10
" Blades, No. 2, 10-in.....	2 95
" No. 2, 10-in.....	3 00

Cross-Cut.	
Atkins No. 211, 4-ft.....	2 70
No. 211, 6-ft.....	4 10
No. 211, 8-ft.....	5 45

Flooring, Hand.	
Atkins No. 95, 16-in.....	19 35
No. 95, 20-in.....	21 55



## ADVERTISERS' INDEX

The dash (—) indicates that the advertisement does not appear in this issue.

SETS.		AXES.	
Nail.		Hindostan.....per lb. New Nets	
Square head.....per doz.	1 34	More Grit.....	
Cup point, knurled.....	1 78	Washita.....	
Rivet.		Emery.	
Farmer's.....	0 19	No. 126.....per doz. New Nets	
Tinner's 3-4.....	0 40		
00-0.....	0 60		
Saw.		Oil—Mounted.	
Atkins No. 10.....per doz.	\$3 80	Arkansas Hard	
No. 12.....	6 20	No. 7.....per doz. New Nets	
Diaston's Monarch		Arkansas Soft	
No. 2.....	9 90	Washita No. 717.....	
Diaston's Monarch		Oil—Unmounted.	
No. 13.....	13 20	Arkansas Hard per lb. New Nets	
Leach's.....	89	Lilly White.....	
Nash's Hand.....	3 15	Queer Creek.....	
Nash's X-Cut.....	4 20	Washita.....	
Stillman's Lever.....	1 30	Scythe.	
Stillman's X-Cut.....	2 50	Black Diamond per gro. New Nets	
Whiting Pattern.....		Crecent.....	
No. 31.....	7 50	Green Mountain.....	
Eccentric Anvil.....		Lamolle.....	
Hand No. 395.....		Extra Quinane.....	
N. P. Norrill.....		Red End.....	
Pattern.....	14 50		
SHEARS.		STOPS, BENCH.	
Nickel Plated, Straight.....	Per Doz. \$12 90	No. 10 Morrill pat-	
" " " ".....	14 85	tern.....per doz.	\$11 00
" " " ".....	16 80	No. 11 Stearns pat-	
Japanned, Straight.....	11 00	tern.....	10 00
" " " ".....	13 40	No. 15 Smith pattern.....	7 00
" " " ".....	13 80		
SHEAVES, SLIDING DOOR.		STOPPERS, FLUE.	
Common.....	2 4 5	Common.....per doz.	\$1 10
Per set.....	\$1 45 1 75 2 40	Gem, flat, No. 3.....	1 00
Hatfield's.....		Gem, No. 1.....	1 10
Per set \$1 30 2 10 3 75 25			
SHINGLES.		STRETCHERS.	
Zinc (Illinois).....	Per Square \$15 00	Carpet.	
SHOES.		Bullard's.....per doz.	\$2 90
Milcor		Excelsior.....	5 25
Galv. Std. gauge, Plain or		Malleable Iron.....	70
corg. round flat crimp.....65%		Perfection.....	8 30
26 gauge round flat crimp.....45%		King.....	4 50
24 gauge round flat crimp.....15%		Wire.	
Square Corrugated.....		O. S. Elwood, No. 1 per doz. Nets	
Standard gauge.....50%		O. S. Elwood, No. 2.....	
26 gauge.....35%			
Conductor.....40%		Malleable Iron.....per lb. \$0 10	
SHOVELS AND SPADES.		Wrought Steel.....per gro.	4 50
Coal.			
Hubbard's		TACKS.	
No. A B C D		Bill Posters' 6-oz., 25-lb. boxes	
1 14 00 15 10 14 45 12 70		per lb.....	15c
2 18 35 15 60 14 85 14 10		Upholsterers' 6-oz., 25-lb.	
3 18 75 16 00 16 25 14 45		boxes, per lb.....	15 1/2c
4 17 10 16 35 16 60 14 85			
Post Drains & Ditching.		TAPES, MEASURING.	
Hubbard's		Asses' Skin.....List & 40%	
Size A B C			
14".....17 15 16 40 15 45		THERMOMETERS.	
16".....17 50 16 75 16 00		Tin Case.....per doz. 30c & 1 25	
18".....17 85 17 10 16 85		Wood Back.....\$2 00 & 12 00	
20".....18 20 17 45 16 70		Glass.....12 00	
22".....18 55 17 80 17 05			
Alaska Steel.		TIES.	
D-Handle.....per doz. \$2 50		Bale.	
Long Handle.....3 00		Single Loop, carload	
SKATES.		lots.....75 & 7%	
Roller.		Single Loop, less than	
Ball Bearing—Boys'.....\$1 50		car lots.....70 & 15%	
Ball Bearing—Girls'.....1 60			
SNAPS, HARNESSES.		TRAPS.	
Covered Spring.....Add 30%		Game with Chains.....Per doz.	
fudd's Pattern Add 33 1-4% to list		Victor No. 1.....\$1 85	
SNATHS.		Oneida Jump No. 1.....2 20	
Double Ring Bush.....per doz. \$ 75		Newhouse No. 1.....4 85	
Patent Loop, Bush.....10 00		Mouse and Rat.....List per gross.	
Patent Loop, Grass.....8 75		Sure Catch Mouse Traps.....\$ 70	
SNIPS, TINNERS'.		Vim Mouse Traps.....3 70	
Clover Leaf.....40 & 10%		Short Stop Mouse Traps.....3 20	
National.....40 & 10%		Wood Choker Mouse	
Star.....50%		Traps & hole.....17 00	
Milcor.....Net		Sure Catch Rat Traps.....14 00	
SPRINGS, DOOR.		Vim Rat Traps.....16 00	
Perfect.		Short Stop Rat Trap.....15 00	
Nos. 2 3 4 5 6 7		Dead Easy Rat Traps.....17 00	
Per doz. 45c 50c 55c 65c 80c 90c		Star Rat Traps.....50 00	
Bellance.		Erie.....54 00	
Light Medium Heavy		Packed in One Bushel Band Stave	
Per doz. \$1 80 2 40 3 75		Baskets.	
Torrey's.....per doz. 1 65		List per bushel.	
SPRINKLERS, LAWN.		Sure Catch Mouse Traps	
Stearns' No. 1.....per doz. \$11 50		(360 Traps).....\$ 30	
SQUARES.		Short Stop Mouse Traps	
Steel and Iron.....Net		(360 Traps).....8 00	
(Add for bluing, \$3.00 per doz. net)		Sure Catch Rat Traps (64	
Mitre.....		Traps).....6 00	
Try.....		Short Stop Rat Traps (64	
Try and Bevel.....		Traps).....5 40	
Try and Miter.....		Assorted Mouse and Rat Traps.	
For's.....per doz. \$8 00		List per bushel.	
Winterbottom's.....10%		Sure Catch (216 Mouse	
STAPLES.		Traps and 36 Rat Traps) \$3 50	
Blind.		Short Stop (216 Mouse	
Barbed.....per lb. 21c & 23c		Traps and 36 Rat Traps) 7 50	
Butter, Tub.....16c & 19c			
Fence—		TROWELS.	
Polished.....per 100 lbs. \$5 45		Cement.	
Galvanized.....6 15		Atkins No. 6.....19 50	
Netting.		No. 9.....25 50	
Galvanized.....per 100 lbs. 6 54		Diaston's.....30%	
Wrought.			
Wrought Staples, Hasps and		TUBS, WASH.	
Staples, Hasps, Hooks and		Standard, Wood.....Ex.	
Staples, and Hooks and		Nos. 3 2 1 large	
Staples.....50 & 10%		Per doz. \$9 50 11 25 13 75 15 50	
Extra heavy.....35%		Galvanized.	
		No. 1.....1 3 5 8	
		Per doz. 13 75 15 95 18 40	

Abbott Mfg. Co.....	—	Kirk-Latty Mfg. Co.....	11
American Brass Co.....	—	Kruse Co.....	—
American Chain Co.....	—	Lalance & Grosjean Mfg. Co.....	—
American Furnace Co.....	—	Lamneck Co., W. E.....	—
American Rolling Mill Co.....	—	Lennox Furnace Co.....	—
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American Stove Co.....	—	Lupton's Sons, David.....	—
Arex Company.....	45	Majestic Co.....	—
Ashton Mfg. Co.....	47	Malleable Iron Range Co.....	—
Berger Bros. Co.....	48	Manny Heating Supply Co.....	—
Bernz Co., Otto.....	—	Maplewood Machinery Co.....	45
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Black Silk Stove Polish Co.....	—	Matthews Banner Range Co.....	—
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Burgess Soldering Furnace Co.	47	Messenger & Parks Mfg. Co.....	—
Burton Co., W. J.....	45	Meyer & Bro. Co., F.....	8
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AMERICAN ARTISAN  
AND  
HARDWARE RECORD  
when writing to advertisers

TWINE.		WHEELS	
White Cotton.		Carborundum.....50%	
Eureka, 4-ply.....per lb. 30c		Emery.....50%	
Jute.		Well, Ins.....10 13	
3-ply and 6-ply Bale Lots. 22 1/2c		Per doz. \$5 50 7 25 8 50	
VALLEY.		12-in. heavy hoisting.	per doz. \$25 00
Formed Valley Galvanized			
Steel.....60-5%			
Milcor.....			
Galv., formed or roll.....60%			
VISES.		WIRE.	
No. 700, Hand.		Plain annealed wire, No. 8	
Inches.....4% 5 5 1/2		per 100 lbs.....\$3 20	
Dos.....\$11 15 13 00 14 55		Galvanized barb wire, per 100	
No. 701, In.....		lbs.....4 10	
Dos.....\$11 15 13 00 14 70		Wire cloth—black painted.	
No. 1, Genuine Wentworth.		12-mesh per 100 sq. ft.....1 90	
Noiseless Saw.....per doz. 15 00		Cattle Wire—galvanized	
No. 2, Genuine Wentworth.		catch weight spool, per	
Noiseless Saw.....per doz. 21 50		100 lbs.....4 10	
No. 3, Genuine Wentworth.		Galvanized Hog wire, 80 red	
Noiseless Saw.....per doz. 20 00		spool, per spool.....5 55	
No. 500, All Steel Folding		Galvanized plain wire, No. 8,	
Saw.....per doz. 16 00		per 100 lbs.....3 70	
WASHERS.		WOOD FACES.	
Standard O. G. cast iron, per		50% off list.	
lb.....2 1/2c			
Wrought steel in 5-lb. boxes,			
per lb.....			
In. 3/16 1/4 5/16 3/8 1/2			
15c 14c 12c 11c 10c			
9 1/2c 9c 8c 8c			
WEDGES.		WRENCHES.	
Az.....per doz. Nets		Coes Steel Handle, 6-in.....60%	
Galling.....per lb. Nets		" " " 8-in.....60%	
Saw.....per lb. 8 1/4		" " " 10-in.....60%	
WEIGHTS.		" " " 12-in.....60%	
Hitching.....per lb. Nets		Coes Knife-Handle, 6-in.....60%	
Sash—f. a. b. Chicago.....		" " " 8-in.....60%	
Ton lots, per ton.....\$25 00		" " " 10-in.....60%	
Smaller lots, per ton.....27 50		" " " 12-in.....60%	
WHEEL BARROWS.		Coes All Patterns.....60%	
Common Wood Tray.....\$3 00			
Steel Tray.....4 50		Knife Handle Pattern.	
Angle leg, garden.....5 25		No. 63, Screw Wrench, List	
		plus.....30%	
		No. 60, Steel Handle.....30%	
WRINGERS.			
No. 790, Guarantee, per doz. \$49 50			
No. 770, Bicycle.....47 00			
No. 670, Domestic.....48 50			
No. 110, Brighton.....39 00			
No. 750, Guarantee.....51 00			
No. 740, Bicycle.....48 50			
No. 25, Pioneer.....35 50			
No. 2, Superb.....25 00			

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Kirk-Latty Mfg. Co.,  
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- Brakes—Cornico.**  
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Maplewood Machinery Co.,  
Chicago, Ill.
- Brass and Copper.**  
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- Cans—Garbage.**  
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- Castings—Malleable.**  
Fanner Mfg. Co., Cleveland, Ohio
- Ceilings—Metal.**  
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Friedley-Voshardt Co.,  
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Milwaukee, Wis.
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American Chain Co.,  
Bridgeport, Conn.
- Chain—Sash.**  
Parker Supply Co.,  
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- Chaplets.**  
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- Chisels.**  
Vaughan & Bushnell Mfg. Co.,  
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- Clips—Damper.**  
Carr Supply Co., Chicago, Ill.  
Waterloo Register Co.,  
Waterloo, Iowa
- Coal Chutes.**  
Majestic Co., Huntington, Ind.  
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Auto-Wheel Coaster Co.,  
No. Tonawanda, N. Y.
- Cores—Auto Radiator.**  
Curfman Mfg. Co., F. L.,  
Maryville, Mo.  
G. & O. Mfg. Co.,  
New Haven, Conn.  
Zarco Mfg. Co., New York, N. Y.
- Cornices.**  
Burton Co., W. J., Detroit, Mich.  
Friedley-Voshardt Co.,  
Chicago, Ill.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Cut-Offs—Rain Water.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.  
Sullivan-Geiger Co.,  
Indianapolis, Ind.
- Dry Paste.**  
Carr Supply Co., Chicago, Ill.
- Eaves Trough.**  
Abbott Mfg. Co., Cleveland, Ohio  
Berger Bros. Co.,  
Philadelphia, Pa.  
Burton Co., The W. J.,  
Detroit, Mich.  
Clark-Smith Hardware Co.,  
Peoria, Ill.  
Lupton's Sons Co., David,  
Philadelphia, Pa.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.  
New Jersey Zinc Co., The,  
New York, N. Y.
- Elbows and Shoes—Conductor.**  
American Rolling Mill Co.,  
Middletown, Ohio  
Dieckmann Co., Ferdinand,  
Cincinnati, Ohio  
Lupton's Sons Co., David,  
Philadelphia, Pa.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Elevators—Hand and Power.**  
Kimball Bros. Co.,  
Council Bluffs, Iowa
- Enamel—Iron.**  
Black Silk Stove Polish Works,  
Sterling, Ill.
- Enamel Ware.**  
Lalanc & Grosjean Mfg. Co.,  
Chicago, Ill.
- Enamels—Wood.**  
Cornish & Co., J. B., Chicago, Ill.  
Federal Varnish Co., Chicago, Ill.
- Fence Gates.**  
American Steel & Wire Co.,  
Chicago, Ill.
- Fenders.**  
Meyers Mfg. Co., Fred J.,  
Hamilton, Ohio
- Files.**  
Heller Bros. Co., Newark, N. J.
- Furnace Rings.**  
Walworth Run Fdy. Co.,  
Cleveland, Ohio
- Garages—Metal.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.  
Thomas & Armstrong Co., The,  
London, Ohio
- Guards—Fire.**  
Meyers Mfg. Co., Fred J.,  
Hamilton, Ohio
- Hammers.**  
Vaughan & Bushnell Mfg. Co.,  
Chicago, Ill.
- Handles—Boiler.**  
Berger Bros. Co.,  
Philadelphia, Pa.
- Handles—File.**  
Parker Supply Co.,  
New York, N. Y.
- Hangers—Eaves Trough.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Heaters—Combination Hot Water.**  
Melbye Bros. Co., Chicago, Ill.
- Heaters—School Room.**  
Haynes-Langenberg Mfg. Co.,  
St. Louis, Mo.  
Meyer Furnace Co., Peoria, Ill.  
Monroe Fdy. & Furnace Co.,  
Monroe, Mich.  
Standard Furnace & Supply Co.,  
Omaha, Neb.
- Heaters—Warm Air.**  
American Furnace Co.,  
St. Louis, Mo.  
Carr Supply Co., Chicago, Ill.  
Dunning Heating Supply Co.,  
Milwaukee, Wis.  
Farquhar Furnace Co., The,  
Wilmington, Ohio  
Forest City Fdy. & Mfg. Co.,  
Cleveland, Ohio  
Fox Furnace Co., Elyria, Ohio  
Hall-Neal Furnace Co.,  
Indianapolis, Ind.  
Haynes-Langenberg Mfg. Co.,  
St. Louis, Mo.  
Henry Furnace & Fdy. Co.,  
Cleveland, Ohio  
Hess-Snyder Co., Massillon, Ohio  
Independent Stove Co.,  
Owosso, Mich.  
Kruse Co., Indianapolis, Ind.
- Heaters—Warm Air—Continued.**  
Lamneck Co., W. E.,  
Columbus, Ohio  
Lennox Furnace Co.,  
Marshalltown, Iowa  
Majestic Co., Huntington, Ind.  
Manny Heating Supply Co.,  
Chicago, Ill.  
Meyer Furnace Co., Peoria, Ill.  
Michigan Stove Co., The,  
Detroit, Mich.  
Monroe Fdy. & Furnace Co.,  
Monroe, Mich.  
Mt. Vernon Furnace & Mfg. Co.,  
Mt. Vernon, Ill.  
Premier Warm Air Heater Co.,  
Dowagiac, Mich.  
Scheible-Moncrief Heater Co.,  
Cleveland, Ohio  
Schwab & Sons Co., R. J.,  
Milwaukee, Wis.  
Standard Fdy. & Mfg. Co.,  
Kansas City, Mo.  
Standard Furnace & Supply Co.,  
Omaha, Neb.  
St. Louis Heating Co.,  
St. Louis, Mo.  
Utica Heater Co., Utica, N. Y.  
Waterloo Register Co.,  
Waterloo, Iowa
- Horse Shoes.**  
American Steel & Wire Co.,  
Chicago, Ill.
- Jobbers—Hardware.**  
Bullard & Gormley Co.,  
Chicago, Ill.  
Clark-Smith Hardware Co.,  
Peoria, Ill.
- Kitchen Utensils.**  
Lalanc & Grosjean Mfg. Co.,  
Chicago, Ill.
- Ladders.**  
Walchli Mfg. Co., St. Louis, Mo.
- Lath—Expanded Metal.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Machines—Crimping.**  
Bertsch & Co.,  
Cambridge City, Ind.
- Machinery—Culvert.**  
Bertsch & Co.,  
Cambridge City, Ind.
- Machines—Razor Blades.**  
Hyfield Mfg. Co.,  
New York, N. Y.
- Machines—Stove Pipe.**  
Hemp & Co., St. Louis, Mo.
- Machines—Tinsmiths'.**  
Bertsch & Co.,  
Cambridge City, Ind.  
Dreis & Krump Mfg. Co.,  
Chicago, Ill.  
Ewert & Kutscheld Mfg. Co.,  
Chicago, Ill.  
Hemp & Co., St. Louis, Mo.  
Maplewood Machinery Co.,  
Chicago, Ill.  
Marshalltown Mfg. Co.,  
Marshalltown, Iowa  
Whitney Mfg. Co., W. A.,  
Rockford, Ill.  
Whitney Metal Tool Co.,  
Rockford, Ill.
- Mailing Lists.**  
Ross-Gould, St. Louis, Mo.
- Metals—Perforated.**  
Harrington & King Perforating  
Co., Chicago, Ill.
- Miters.**  
Friedley-Voshardt Co.,  
Chicago, Ill.
- Miters—Eaves Trough.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Nails—Slatting.**  
Hussey & Co., C. G.,  
Pittsburgh, Pa.
- Nails—Wire.**  
American Steel & Wire Co.,  
Chicago, Ill.
- Ornaments—Sheet Metal.**  
Friedley-Voshardt Co.,  
Chicago, Ill.  
Gerock Bros. Mfg. Co.,  
St. Louis, Mo.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Patterns—Furnace & Stove.**  
Cleveland Castings Pattern Co.,  
Cleveland, Ohio  
Quincy Pattern Co., Quincy, Ill.  
Shaw & Son Co., The Geo. E.,  
Cleveland, Ohio  
Vedder Pattern Works,  
Troy, N. Y.
- Pipe and Fittings—Furnace.**  
Carr Supply Co., Chicago, Ill.  
Dunning Heating & Supply Co.,  
Milwaukee, Wis.  
Henry Furnace & Fdy. Co.,  
Cleveland, Ohio  
Lamneck Co., W. E.,  
Columbus, Ohio  
Manny Heating Supply Co.,  
Chicago, Ill.  
Meyer & Bro. Co., F., Peoria, Ill.  
Osborn Co., The J. M. & L. A.,  
Cleveland, Ohio  
Standard Furnace & Supply Co.,  
Omaha, Neb.
- Pipe and Fittings—Stove.**  
Hemp & Co., St. Louis, Mo.  
Meyer & Bro. Co., F., Peoria, Ill.  
Sullivan-Geiger Co.,  
Indianapolis, Ind.
- Pipe—Conductor.**  
Berger Bros. Co.,  
Philadelphia, Pa.  
Burton Co., W. J., Detroit, Mich.  
Clark-Smith Hdw. Co., Peoria, Ill.  
Dieckmann Co., Ferdinand,  
Cincinnati, Ohio  
Friedley-Voshardt Co.,  
Chicago, Ill.  
Hussey & Co., C. G.,  
Pittsburgh, Pa.  
Lupton's Sons Co., David,  
Philadelphia, Pa.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.  
New Jersey Zinc Co., The,  
New York, N. Y.
- Polish—Metal & Stove.**  
Black Silk Stove Polish Works,  
Sterling, Ill.
- Posts—Steel Fence.**  
American Steel & Wire Co.,  
Chicago, Ill.
- Punches.**  
Bertsch & Co.,  
Cambridge City, Ind.  
Whitney Mfg. Co., W. A.,  
Rockford, Ill.  
Whitney Metal Tool Co.,  
Rockford, Ill.
- Punches—Combination Bench and Hand.**  
Parker Supply Co.,  
New York, N. Y.  
Whitney Metal Tool Co.,  
Rockford, Ill.
- Punches—Hand.**  
Parker Supply Co.,  
New York, N. Y.  
Whitney Metal Tool Co.,  
Rockford, Ill.
- Quadrants—Damper.**  
Parker Supply Co.,  
New York, N. Y.
- Ranges—Combination Gas & Coal.**  
American Stove Co., St. Louis, Mo.  
Hoosier Stove Co., Marion, Ind.  
Independent Stove Co.,  
Owosso, Mich.  
Malleable Iron Range Co.,  
Beaver Dam, Wis.  
Quick Meal Stove Co.,  
St. Louis, Mo.
- Ranges—Gas.**  
American Stove Co., St. Louis, Mo.  
Clark & Co., Geo. M., Chicago, Ill.  
Dangler Stove Co., Cleveland, O.  
Hoosier Stove Co., Marion, Ind.  
Quick Meal Stove Co.,  
St. Louis, Mo.